OCCASIONAL PAPERS

of the

British Columbia Provincial Museum

Number 7

•

An Annotated List of

The Birds of the East Kootenay

British Columbia

by

Walter B. Johnstone

LEGISLATIVE LIBRARY
WITHDRAWN
LEGISLATIVE LIBRARY
TORONTO
JAN -5 1950
RECEIVED

ISSUED DECEMBER, 1949

VICTORIA, B.C.:
Photo-offset by Don McDiarmid, Printer to the King's Most Excellent Majesty.
1949.

104-04765/

Occasional Papers of the

BRITISH COLUMBIA PROVINCIAL MUSEUM

Number 7

AN

ANNOTATED LIST

OF

THE BIRDS OF THE EAST KOOTENAY

BRITISH COLUMBIA

By

Walter B. Johnstone

Issued--December 1st, 1949.

AN ANNOTATED LIST OF

THE BIRDS OF THE EAST KOOTENAY BRITISH COLUMBIA

By

WALTER B. JOHNSTONE

C O N T E N T S

INTRODUCTION 1

PHYSIOGRAPHY 2

BIOTIC AREAS 3

Dry Forest Biotic Area 3

Columbia Forest Biotic Area 4

Southern Alplands Biotic Area 4

ANNOTATED LIST 5

An Annotated List of The Birds of the East Kootenay British Columbia

Walter B. Johnstone

INTRODUCTION

The notes on which this list is based were commenced in February 1937, and have been carried on intermittently up to the present time. (June 1949.)

It is not suggested that the list here submitted is complete, for no doubt there are birds that occur in the district which have escaped the writer's notice, for at best, the observations noted and the specimens collected, were gathered here and there as opportunity offered. It is, however, a serious attempt to record the bird fauna not hitherto fully reported, in a limited section of southeastern British Columbia. (See also "Preliminary Report on the Birds and Mammals of Kootenay National Park, British Columbia," Munro and Cowan, Can. Field-Naturalist, Vol. 58, No. 2, 1944.)

PHYSIOGRAPHY

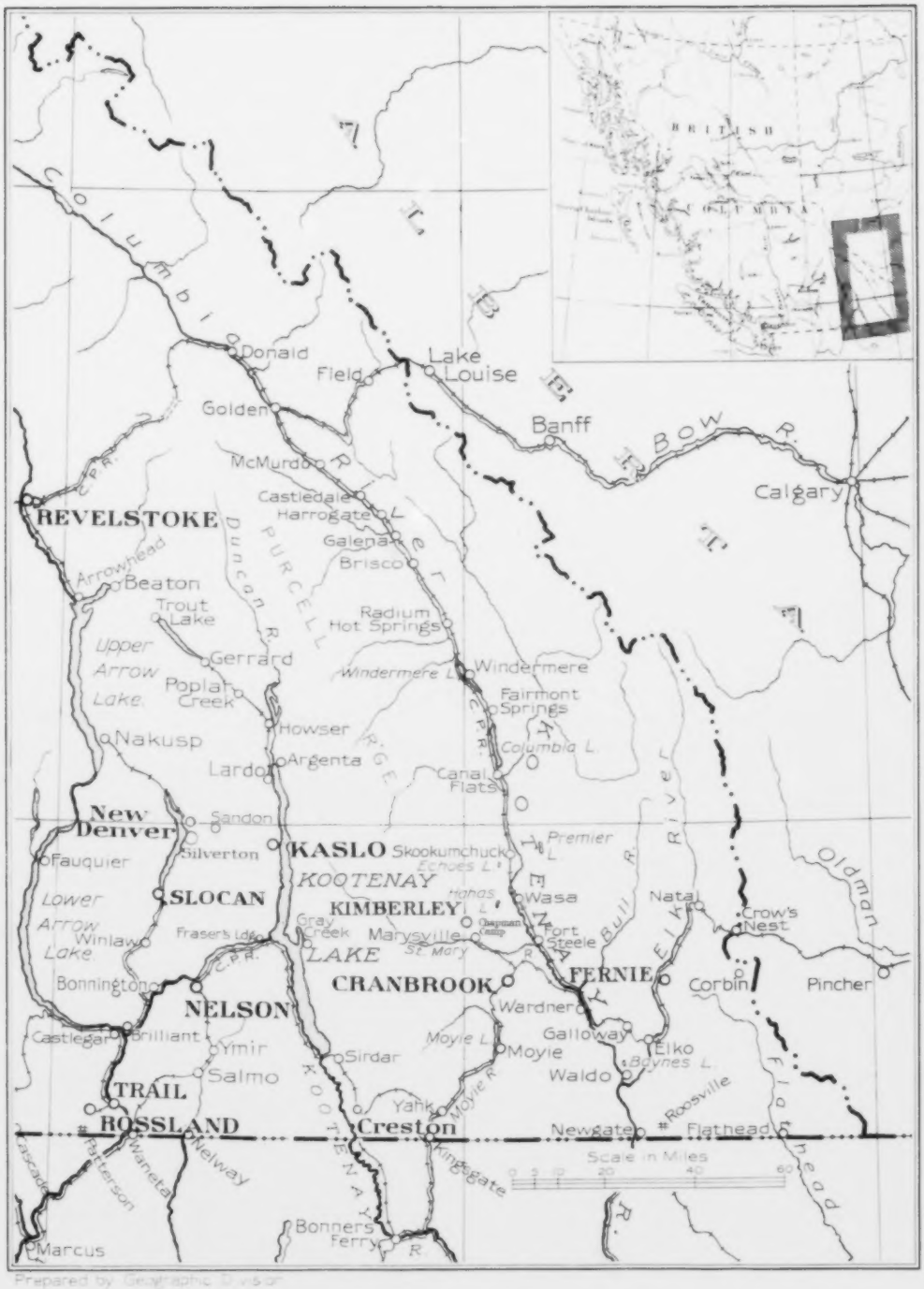
The area under review is the portion of British Columbia that is bounded on the east by the province of Alberta, and extends westwards to approximately longitude 116°-50' W., and northward from the International Boundary line, which separates it from the states of Montana and Idaho, to about latitude 52°-00'.

The Rocky mountains occupy the eastern section of the area, and the Purcell range, a part of the Selkirk system, lies to the west; this range is an elliptically-shaped group of mountains about two hundred miles long by sixty miles wide, separated from the Rocky mountain system by the Rocky mountain trench, that great and remarkable longitudinal depression which extends from the State of Montana to Alaska, and in which is found the source of the north flowing portion of the Columbia river, and the meandering course of the south flowing Kootenay river that has its source in the Kootenay National Park. This latter river, after flowing in a southerly direction, crosses the International Boundary at Newgate; later swinging to a northerly course it flows back into British Columbia, emptying into Kootenay lake, and finally enters the Columbia river at Castlegar.

In southeastern British Columbia, the floor of this intermountain depression is a beautiful stretch of park-like country, from five to sixteen miles in width, through which wind the slow flowing Columbia and Kootenay rivers; it also contains numerous open meadows and lakes, some of which are of considerable size, such as Columbia and Windermere lakes.

The western Rocky mountain front forms the eastern flank of the trench, and rises abruptly to heights of nine thousand feet out of the valley, which has an elevation of about three thousand feet. In contrast to the wall-like character of its eastern border, the western flank of the valley is marked by rounded wooded foothills, that in turn give way to the rugged mountains of the Purcell range.

From the mountains to the east and west, flow the tributary streams that help to swell the Columbia river on its way to the Pacific Ocean. Some of these streams have formed wide lateral valleys in which the dry climate of the valley floor gradually gives way to one of increasing moisture, a feature which has a direct bearing on the flora and fauna peculiar to these valleys.



Prepared by Geographic Division

Map of the East Kootenay.

BIOTIC AREAS

In the following descriptions of the biotic areas of the East Kootenay, the writer has followed the determination of Munro and Cowan as defined in "A Review of the Bird Fauna of British Columbia" (B. C. Prov. Museum Special Pub. No. 2, 1947.)

Dry Forest Biotic Area

The Dry Forest Biotic Area extends into this section of British Columbia from the State of Montana by way of the Rocky mountain trench, continuing north up the valley for approximately one hundred and fifty miles, then gradually merging, near Golden, with an area of increasing humidity recognizable as the Columbia Forest Biotic Area. In the valley, the east boundary of the Dry Forest Biotic Area is often abrupt, giving way to the Sub-Alpine Forest Biotic Area on the rapidly ascending western flank of the Rocky mountains. On the west, the transition is less marked on the slowly ascending foothills of the Purcell range. In short, the East Kootenay section of the Dry Forest Biotic Area is relatively narrow and altitudinally high, the elevation above sea-level at Cranbrook being approximately 3050 feet.

The winters are cold, ranging from freezing point to zero, with the temperature occasionally for short periods dropping as low as twenty-five and thirty degrees below zero. The summers are dry and warm; the average mean maximum for July and August is eighty-five degrees. Annual precipitation is light, fifteen inches being about average, with probably forty percent of this being accounted for by snow.

Yellow pine (Pinus ponderosa) is the dominant tree on the bench-lands, being intermingled with Douglas fir (Pseudotsuga taxifolia) and western larch (Larix occidentalis). Along the lakes and in the riverbottoms black cottonwood (Populus trichocarpa) is predominant, often growing in dense thickets of dogwood or redosier (Cornus stolonifera) and willow (Salix sp.). Scattered over the open hillsides and in the park-like areas are groves of aspen (Populus tremuloides), black birch (Betula fontinalis), and choke cherry (Prunus demissa), with here and there, growing in the more arid places, stunted bushes of juniper (Juniperus communis).

During the last forty or fifty years large areas in this great valley have been denuded of all merchantable timber, and doubtless

profound changes in biotic environment have taken place; for where great stands of yellow pine and Douglas fir once graced the landscape, only blackened and rotting stumps remain. In these logged and burned-off spaces nature is slowly concealing the scars: young pine and fir trees are gradually forming dense thickets, while antelope bush (Purshia tridentata), soopolallie (Shepherdia canadensis), oregon grape (Berberis repens), and many native and introduced grasses, among which Bromus tectoris is predominant, provide the ground cover.

Columbia Forest Biotic Area

Because of its isolation and small extent, the Columbia Forest Biotic Area has but little influence on the diversity of the bird fauna in the East Kootenay as a whole, for, with the exception of a small part of the Columbia River valley north of Golden, and a short section in the St. Mary river valley, this biotic area is not found elsewhere in the district under review. The St. Mary river rises on the summit of the Purcell range, and flows eastward to join the Kootenay river at Fort Steele. Approximately twenty-five miles upstream from its confluence with the Kootenay river, the St. Mary river pursues a meandering course in a wide valley floor, and here the transition between the semi-arid dry forest and the humid forest is quite abrupt; yellow pine gives way to western cedar (Thuja occidentalis) which is the climax species in this part of the valley. There is also a considerable intrusion of paper birch (Betula papyrifera), western hemlock (Tsuga heterophylla), and western white pine (Pinus monticola). The dense understory includes yew (Taxus brevifolia), devils club (Fatsia horrida), thimble berry (Rubus parviflora), and luxurious growths of lady fern (Athyrium filix-femina).

Sub-Alpine Forest Biotic Area

Between the semi-arid dry forest of the Kootenay-Columbia valley and the high summits to the east and west, there is a humid coniferous forest belt occupying a zone approximately between 4500 and 7000 feet above sea-level. To the west lie the subdued rounded foothills of the Purcell range which in turn give way to a region that is rugged and mountainous, many summits exceeding 9000 feet in elevation; a deeply dissected upland surface with numerous projecting peaks and great trough-like valleys, terminating in cirques or basins, which are often modified by the talus slopes

Fig. 1. The Rocky Mountain Trench, Looking South.

Fig. 2. South End of Columbia Lake.

which at times encroach upon small lakes so characteristic of these glacial amphitheatres. To the east rise the majestic Rocky mountains, rugged and precipitous with many deep intersecting valleys and high plateaus characterized by typical alpine mountain topography. Approaching the Alberta boundary this mountain system gradually changes to rolling grassy foothills, which in turn give way to the flat lands of the Alberta prairies. In this zone between the Dry Forest area and the Alplands at timber-line, the forest is almost exclusively coniferous, with alpine fir (Abies lasiocarpa) and Englemann's spruce (Picea Englemanni), the dominant tree species, with Lyall's larch (Larix Lyallii) and white-barked pine (Pinus albicaulis) becoming conspicuous near timber-line. Typical underbrush is mountain alder (Alnus tenuifolia), white rhododendron or mountain misery (Rhododendron albiflorum), false azalea (Menziesia ferruginea), and several species of huckleberry (Vaccinium).

Southern Alplands Biotic Area

This area consists of the meadows and summits above timber-line, and is a zone approximately between 6000 and 8000 feet above sea-level. Dwarf willows (Salix) form dense thickets and mats in moist places, while around the alpine tarns the ground is often carpeted with moss heather (Cassiope tetragona), false heather (Phyllodoce empetriformis), American laurel (Kalmia polifolia), and a thick turf of sedge (Carex).

ANNOTATED LIST

Common Loon--Gavia immer (Brünnich)

Formerly a common summer visitant to most of the lakes in the Dry Forest area. There has been a definite falling off in the population during the last few years, probably owing to persecution by over-zealous and misinformed fishermen. This would seem to be borne out by the fact that most of the breeding pairs are now to be found on lakes without fish populations. Non-breeding birds, those thought to be sexually immature, are seen on the larger lakes during the summer often in small groups; seven adults were seen together on Premier lake on July 26, 1948.

Migration, spring--The average date of arrival is about April 25. Earliest spring records are, April 9, 1942, one on the Kootenay river near Wardner; April 10, 1946, one on Wasa lake.

Migration, autumn--August 23, 1937, two on Baynes lake; September 22, 1938, two on Columbia lake; December 16, 1939, two on Moyie lake; September 3, 1948, one on Wasa lake.

Nesting--June 9, 1940, two adults and one young on Ward lake; June 15, 1941, nest on Echoes lake containing two eggs, one of which hatched on June 15 (one egg was addled). The nest was situated on a rocky point just above high-water mark; little attempt had been made to construct a nest, the eggs were laid in a depression that had been scantily lined with dry cat-tail, (Typha). July 26, 1941, one adult with two half grown young on Columbia lake; May 30, 1942, a nest built on a small muddy island in Hahas lake, one adult was incubating two eggs, the other was out in the lake calling. The nest, a bulky affair of dry cat-tail and water moss, was most conspicuous; both it and the incubating bird could be plainly seen from the highway some 200 yards away.

Red-Necked Grebe--Colymbus grisegena Boddaert

In summer this grebe is a common visitant throughout the Dry Forest area of the district, breeding on most of the suitable lakes. From records kept it would appear to be the latest of all the grebes to arrive in the spring.

Migration, spring--May 24, 1939, one on the Moyie river; May 26, 1940, six together on Columbia lake, pairing and very noisy; April 26, 1944, one on Island pond; April 27, 1945, two on the Kootenay river near Wardner; May 26, 1947, two on Ward's lake.

Migration, autumn--Sept. 18, 1938, three on Columbia lake; Nov. 25, 1939, two on the Columbia river near its confluence with Windermere lake (the weather was cold and only a small portion of river was free of ice); Oct. 22, 1940, three on the Kootenay river near Wardner; Sept. 2, 1941, five on Columbia lake.

Nesting--On June 16, 1940, in a sheltered bay on Columbia lake, a floating nest composed of Scirpus stems of the previous year was anchored to yellow pond-lily leaves, (Nymphaea); the nest was visible for a considerable distance and was in plain view of an incubating bald eagle, who had her nest in a fir tree on the bank almost directly above the grebe's nest which contained five heavily stained and partly incubated eggs; these were collected. On July 7, the grebe had constructed a similar nest within twenty feet of the

original site and the female was incubating four eggs, and allowed the canoe to approach to within fifteen feet of the nest before she left, dived, and reappeared beyond the lily bed. Later, on July 21, out on the lake but near the nest site, a female was observed carrying two young on her back, their heads projecting from the feathers between her wings. On the approach of the canoe the grebe dived, and when she surfaced the young were in the same position; this was repeated several times.

In a depression on the Rampart prairie there is a small, muddy pond not over four acres in extent; no vegetation exists in the water except pondweeds (Potamogeton) and algae; the flat shores are kept bare by browsing cattle who frequently come to drink; here, in these exposed surroundings, a pair of red-necked grebe successfully completed their nesting cycle. The nest was situated six feet from the shore-line and was composed of a compact mass of pondweed resting on the mud. On July 12, 1948, one adult was observed incubating, the other was close to the nest apparently making repairs to it. As the nest was approached both birds swam out to the centre of the pond and called repeatedly; the nest contained two eggs, one hatching, and a chick with the shells from which it had just emerged. While the nest was being examined the chick struggled out of it and swam in the direction of the calling parents, getting about eight feet from the nest before becoming entangled in the floating algae. As soon as the nest was left, both parents returned to the chick, which was seen to climb on to one adult's back and disappear into the feathers between the wings; shortly after this one adult resumed incubation, the other remained by the nest. On August 5, both adults and two large young were seen on this pond.

Horned Grebe--Colymbus auritus Linnaeus

Common summer visitant to the small ponds and grassy sloughs. This grebe appears to leave here early in the autumn, and does not winter in the district owing to all the lakes becoming ice-covered, but it is known to winter regularly on Kootenay lake, a few miles west of here.

Migration, spring--May 12, 1937, two in the Cranbrook marsh; May 15, 1939, one on Moyie lake; May 6, 1940, three on Moyie lake; April 22, 1942, two on Baynes lake; May 1, 1945, two on the Kootenay river near Wardner; May 8, 1946, two on Columbia lake; May 4, 1947, one on Columbia lake.

Migration, autumn--September 6, 1937, one on Rampart pond; September 29, 1942, one on Rampart pond.

Nesting--May 29, 1938, nest in the Cranbrook marsh containing five partly incubated eggs; as this marsh dried up in the latter part of July it is doubtful if any young survived. On July 1, 1937, a pair were breeding on Jap lake. The nest, raised about five inches above the water-level, was on an open mud flat covered with three inches of water and devoid of any vegetation. Close inspection of the nest could not be made owing to the extreme fluidity of the mud, but the pair were watched for some time with binoculars; one adult continued incubating while the other made frequent journeys to deep water and after diving, returned with vegetable matter in its beak, which both birds helped to arrange about the nest; in going to and from the nest, the bird had to propel itself, with difficulty, through the shallow water and mud for at least twenty feet before it had sufficient water to dive in. The site was again visited on July 24: the nest was unoccupied and out on the lake an adult was followed by one young.

Turtle lake is a typical East Kootenay dry forest "pot hole" of about twenty acres in extent; the muddy shores have no marginal vegetation other than grass and sedge which is kept closely cropped by range cattle: on June 2, 1940, two horned grebe were on the lake; both were diving and returning to the surface with weed that was being used as material for a nest under construction, it being attached to a partly submerged limb of a dead and weather-beaten yellow pine that had fallen into the water some years previously; on June 8, the nest contained one egg completely covered by weed, both birds were at the other end of the lake diving. As the nest was approached on June 13, the grebe left the nest, dived, and surfaced about thirty feet away. The nest contained five uncovered eggs; the other grebe was not seen.

Black-Necked Grebe--Colymbus nigricollis (Brehm)

Decidedly uncommon, and there is no marked spring migration, nor is there any evidence of breeding in this area.

Migration, spring--April 30, 1940, five on the Kootenay river near Wardner; April 28, 1948, ten on Baynes lake, in company with ruddy ducks; May 5, 1948, one on a small slough near Canal Flats.

Western Grebe--Aechmophorus occidentalis (Lawrence)

Transient only, no evidence of breeding in this area.

Migration, spring--April 18, 1941, forty on Moyie lake;

May 11, 1943, thirty on Baynes lake; April 27, 1945, five on Baynes lake; May 9, 1946, ten on Baynes lake.

Migration, autumn--October 27, 1937, seven on Columbia lake; October 18, 1938, one on Windermere lake; October 29, 1939, three on the Kootenay river near Wardner; October 29, 1942, seven on Baynes lake, November 1, 1945, six on Baynes lake. On November 12, 1945, the writer was asked to identify a bird that was in a lumber yard at Cranbrook. It turned out to be a western grebe that had landed in the snow and was unable to take off again; there were eight inches of loose snow on the ground, and the temperature was near the zero mark. It took several minutes of strenuous running and dodging before the bird was captured, for the speed with which it could "paddle" through the snow was remarkable; its first reaction on being released in the Kootenay river was a prolonged drinking bout.

An interesting note on migration was taken on October 13, 1948, when fifty-one western grebe were counted on Crows Nest lake, which is at an elevation of 4700 feet above sea-level, and directly in the Crows Nest pass between British Columbia and Alberta; the occurrence of these birds in this pass through the Rocky mountains at once suggests that it is used by them as an east-west migration route in the autumn, and conversely as a west-east one in the spring. This suggestion would seem to be further stressed in view of the fact that, during migration, more of these birds have been observed on Baynes lake than anywhere else in the area, and Baynes lake would be the logical resting place for them in coming from, or going to, this pass into Alberta.

Pied-Billed Grebe--Podilymbus podiceps (Linnaeus)

Summer visitant.

Migration, spring--May 1, 1940, one on Grebe pond; May 26, 1947, two on Jap lake; May 5, 1948, two on Island pond.

Migration, autumn--August 18, 1940, one on Columbia lake.

Nesting--July 3, 1948, adult with one young.

White Pelican--Pelecanus erythrorhynchos Gmelin

Rare transient: four were seen on September 6, 1941, on Columbia lake.

Great Blue Heron--Ardea herodias Linnaeus

No evidence of breeding in the district under review, but a postbreeding dispersal brings a small autumn population into the Moyie and Kootenay valleys, probably from the nesting ground at Creston, which is approximately one hundred airline miles southwest from Columbia lake.

Summer records--May 7, 1944, one on Kootenay river at Skookumchuck.

Autumn records--August 4, 1940, one on Columbia lake; August 31, 1941, two adults and two young at Columbia lake; August 18, 1942, two at Columbia lake; September 15, 1938, one on Moyie river; September 1, 1939, five young and one adult on Columbia lake; October 19, 1940, two on Columbia lake; October 13, 1946, one on Columbia lake.

Winter records--December 17, 1940, one on the Moyie river; December 19, 1947, one on Palmer Bar creek; January 27, 1943, one on the Moyie river.

American Bittern--Botaurus lentiginosus (Montagu)

Summer visitant, fairly abundant in the Columbia river valley between Canal Flats and Golden.

Migration, spring--May 13, 1947, two at Wasa; May 15, 1938, three at Wasa; May 16, 1939, one on Columbia lake; May 10, 1942, one at wasa; May 10, 1944, one at Wasa; May 4, 1945, two on Columbia lake; May 3, 1947, one at Columbia lake; April 24, 1948, one at Columbia lake.

Migration, autumn--August 31, 1941, one at Columbia lake; August 25, 1942, one at Waldo; September 9, 1947, one at Wasa; August 31, 1948, one at Wasa.

Nesting--The bittern arrives at the nesting ground early in May, and at once makes its presence known by its remarkable song; this vocal endeavour continues throughout the early summer; for instance in 1947, on Columbia lake, it commenced on May 3 and was last heard on July 12. On May 4, 1945, this peculiar performance was watched at close range for two hours; during this time the "song" was continued intermittently, with intervals of from four to seven minutes between each stanza. The bird commenced the act by lowering its head and gulping air three times, the lower neck dilating until a yellow sac was plainly visible; immediately following this the head was raised and thrown forward with a convulsive jerk, producing

Fig. 3. Columbia Lake: Bald Eagle's Nest with One Young in Foreground.

Fig. 4. The Kootenay River Valley near Wasa.

three syllables pump-a lunk, repeated three or four times until the neck became deflated; during the performance the white nuptial plumes were conspicuously displayed.

In 1943, a pair nested in a Scirpus bed at the south end of Columbia lake. The site was about 100 feet from shore opposite a wooded bank that facilitated observation; the nest was a large flat affair of dead Scirpus. On July 1, four fully fledged young were standing and walking about on the nest platform; once, when a crow flew over the nest, all four young at once assumed the protective pose, motionless, standing at their full height with beaks pointed skywards. A close watch was maintained from 11 a. m. to 2 p. m. but neither parent made any attempt to feed or even approach the young. Two adults remained standing together about 200 feet from the nest, one of them occasionally "pumping," and obviously unaware of the watcher's proximity.

Whistling Swan--Cygnus columbianus (Ord)

Transient, more numerous in the spring than in the autumn.

Migration, spring--April 11, 1937, seven, Wasa lake; April 15, 1938, seventeen, Wasa lake; March 25, 1941, one hundred and fifteen, Columbia lake; March 27, 1939, thirty, Columbia lake; March 27, 1940, nine, Moyie lake; March 31, 1943, eight, Columbia lake; March 28, 1945, four, Wasa lake.

Migration, autumn--November 14, 1939, seven, Columbia lake; October 28, 1940, twenty-nine, Columbia lake; November 27, 1942, three, Columbia lake; October 30, 1945, five, Columbia lake.

Summer records--June 18, 1939, two, Jap lake; June 25, 1945, seven, Columbia lake; July 14, 1948, one, Wasa slough.

Trumpeter Swan--Cygnus buccinator Richardson

Included in this list on the basis of two definite sight records. From April 20 to 27, 1941, an adult remained on Colvalli slough. Once when the bird was approached to within 150 feet, it left the water and flew to the other end of the slough, at the same time giving the deep, musical call.

On October 1, 1948, two adults, after being alarmed by some duck hunters, flew around the south end of Columbia lake several times, once passing within 30 feet of a blind in which the writer was sitting, then disappeared flying south down the Kootenay valley.

During all the time they were in sight, both birds were giving the sonorous call.

Canada Goose--Branta canadensis canadensis (Linnaeus)

Common summer visitant, nesting regularly in the Columbia valley between Canal Flats and Golden. Arriving early in March, the majority formerly remained in the district until the freezing over of lakes and rivers forced their departure; it is apparent that the extensive cultivation of grain in the reclaimed area adjacent to Creston, during recent years, has brought about a change in their autumn migration schedule, for now the majority of the geese leave for this enhanced feeding ground at a much earlier date.

Migration, spring--March 25, 1938, one, Wasa lake; March 30, 1939, ten, Wasa lake; March 3, 1941, twelve, Wasa lake; March 7, 1944, six, Wasa lake; March 13, 1947, one, Moyie river.

Migration, autumn--November 25, 1939, twenty, south end of Windermere lake; December 31, 1940, six in a small patch of open water, south end of Columbia lake; December 10, 1941, twenty, south end of Columbia lake.

Nesting--It is difficult to imagine the motive that impelled this otherwise terrestrially inclined water fowl to adopt the routine of using the nests of other birds, high up in trees, in which to lay their eggs and hatch the young. Could the experience gained in recurring disasters, as early freshets destroyed their eggs, have taught these intelligent birds to nest at higher elevations? For there is no doubt that many nests, situated near low water mark, are destroyed when there is a sudden rise in the Columbia river's upper watershed, caused by an occasional early spring. For instance, on May 6, 1939, a goose started incubating five eggs in a nest situated among a thick growth of tall reed grass (Phragmites communis) on a small island in the Columbia river; when the nest was again visited on May 28, the eggs were under five inches of water.

There have been many reports of geese pre-empting ospreys' nests in the Columbia valley; two cases will be cited here. On April 24, 1938, a pair occupied an osprey's nest in a live cottonwood tree (Populus trichocarpa) near Radium station. The nest was located at a calculated height of 78 feet above the ground. The incubating bird, flushed with some difficulty by throwing stones up at the nest, flew off calling loudly and was immediately joined by the gander (?), and the pair continued to fly in circles around the nest for some time. On May 8, of the same year, another nest was visited near Edgewater. In this case, also, the

geese were occupying an old osprey's nest in a dead cottonwood tree, the nest being at an estimated height of 60 feet above the ground; the incubating bird was not flushed but could be plainly seen with the neck stretched out on the rim of the nest. It would be interesting if some authentic information could be obtained regarding the manner in which the goslings find their way from these nests to water.

It is believed that the season of 1948 produced a bumper crop of goslings, for on May 16, from a spot on the south end of Columbia lake, there could be seen at one time a goose incubating five eggs on a muskrat house, and four pairs accompanied by young, three pairs having three goslings each and one pair with four.

White-Fronted Goose--Anser albifrons (Scopoli)

A rare transient, recorded only in the autumn at Creston.

Migration, autumn--October 14, 1942, flock of about seventy; October 18, 1943, several large flocks; October 13, 1944, several flocks, sixty counted in one flock.

Snow Goose--Chen hyperborea (Pallas)

Scarce spring transient in the Kootenay and Columbia valley, so far not recorded in the autumn.

Migration, spring--Four remained at the north end of Columbia lake from May 14 to May 20, 1939; two remained on the Kootenay river near Skookumchuck from April 26 to April 30, 1944; one at Island pond, May 10, 1942; one on Baynes lake, May 9, 1946.

Mallard--Anas platyrhynchos Linnaeus

Abundant summer visitant, a few remain through the winter in spots where springs keep water clear of ice.

Migration, spring--March 19, 1940, eighty-three, Wasa lake; March 20, 1941, two hundred, Wasa slough; April 6, 1944, four hundred and twenty counted on Wasa lake and slough; March 26, 1945, four hundred, Wasa slough.

Nesting--Female with seven downy young on Moyie river, May 31, 1943; in the evening of June 14, 1945, a female followed by seven downy young walked along the cement sidewalk on Garden Avenue,

Cranbrook, stopping to drink at a sprinkler which was on the boulevard.

Winter records--December 20, 1940, two males and two females, Palmer Bar creek; January 29, 1942, thirty-two, south end of Columbia lake; January 11, 1944, eleven, Palmer Bar creek; February 2, 1944, three males and one female on the Moyie river.

Gadwall--*Anas strepera* Linnaeus

Included on the basis of three males and one bird in female plumage seen in a duck hunter's bag at Columbia lake, September 22, 1940.

Pintail--*Anas acuta* Linnaeus

Abundant transient, more so in the spring than in the autumn; nests sparingly in the district.

Migration, spring--April 18, 1937, eighty-five, Wasa lake; March 18, 1938, two males, Kootenay river; March 24, 25, 26, 1940, estimated to be about one thousand on Wasa lake and slough and Pollens slough; March 25, 1941, ninety-eight, Wasa slough; April 6, 1944, sixty, Wasa slough; March 26, 1945, two hundred counted on Wasa lake.

Migration, autumn--Last seen November 25, 1940, six, Kootenay river.

Nesting--Nest in Cranbrook marsh at the base of willow bush, with nine eggs, female flushed from nest, May 24, 1939. Female followed by six downy young, Columbia lake, May 30, 1940.

Green-Winged Teal--*Anas carolinensis* Gmelin

By no means an abundant summer visitant, and no large concentrations have been noted either in spring or autumn migration. They nest sparingly in suitable locations in the Kootenay and Columbia valleys.

Migration, spring--Earliest date noted, April 6, 1944, three males and two females in a small pond near Cherry creek.

Migration, autumn--Latest date seen, October 11, 1944, flock of sixteen on south end of Columbia lake.

Nesting--May 29, 1939, female with seven downy young in Cranbrook slough; later, on June 8, of the same year, two nests were found about 100 feet apart on a dry ridge that crosses the Cranbrook marsh; both nests were located on the ground at the base of a small birch tree (Betula glandulosa); one nest contained six eggs, the other nine; both females were flushed from the nests.

Blue-Winged Teal--Anas discors Linnaeus

Summer records--May 12, 1937, one male with a female teal in the Cranbrook marsh; May 24, 1937, one male with a female teal in the Cranbrook marsh; June 8, 1937, one male in the Cranbrook marsh; June 17, 1945, one male with a female teal in the Cranbrook marsh; May 9, 1947, two males and one female teal with the blue forewing, in a small pond at Wasa; one of the males drove the other away from the female.

Cinnamon Teal--Anas cyanoptera Vieillot

Scarce summer visitant.

Summer records--May 29, 1937, one male in Cranbrook marsh; April 20 and 27, 1941, one male in Colvalli slough; May 15, 1945, male and female on a small pond near Cherry creek; May 9, 1947, two males and two females, evidently paired, on a small pond near Wasa; May 18, 1947, male and female together in Cranbrook marsh.

Nesting--No specimens having been collected, the following notes that might apply to either Anas discors or Anas cyanoptera, are given here for what they are worth. In a narrow channel in the Cranbrook slough on May 24, 1939, there was a male Cinnamon teal and a male Blue-winged teal; close to them there were two females, one followed by seven downy ducklings, the other by five. August 3, 1947, a female was seen on Rampart pond followed by five half-grown young.

Baldpate--Mareca americana (Gmelin)

Common transient, a few nest in the district.

Migration, spring--April 9, 1939, seventeen with a large flock of mallard on Pollen slough; March 25, 1940, thirty on Turtle lake;

March 25, 1941, ten on Columbia lake; April 10, 1946, approximately two hundred on Wasa lake.

Migration, autumn--Latest date noted, November 25, 1940.

Nesting--June 7, 1941, female with seven young, Cranbrook slough; Aug. 9, 1942, female followed by seven "flappers," on Columbia lake; July 12, 1947, female followed by six downy young, Columbia lake.

Shoveller--Spatula clypeata (Linnaeus)

A decidedly uncommon spring transient. No autumn records, and only one summer record, that of a male partly in eclipse plumage on August 2, 1944, in the Cranbrook marsh.

Migration, spring--May 24, 1939, two males in the Cranbrook marsh; May 3, 1942, four males and five females in courtship, Turtle lake; April 27, 1945, forty-eight, sexes about even, on Hay ranch slough.

Wood Duck--Aix sponsa (Linnaeus)

This is a rare duck in the district, and no summer records have been obtained to indicate that they might possibly nest in the Kootenay or Columbia valleys.

Spring records--April 11, 1937, a pair on Wasa slough; May 6, 1939, a pair on Columbia lake.

Autumn records--October 22, 1943, one in female plumage shot on Columbia lake; September 18, 1946, one in female plumage seen in hunter's bag at Spillamachene.

Redhead--Aythya americana (Eyton)

A rare spring migrant. No summer or autumn records.

Spring records--March 29, 1940, nine males on Wasa lake; June 9, 1941, two males on Columbia lake; April 24, 1942, nine males and three females on McClures pond.

Fig. 5. The Dry Forest Biotic Area, with the Rocky Mountains in the Background.

Fig. 6. The Dry Forest Biotic Area Where the Yellow Pine is the Dominant Tree.

Ring-Necked Duck--Aythya collaris (Donovan)

This is one of the rarer ducks, better described as a scarce spring migrant. There are no nesting records.

Spring records--May 12 and 13, 1945, nine males together and a male and female by themselves, evidently paired, on Island pond; April 27, 1948, one male on Turtle lake.

Summer records--In the Cranbrook marsh on June 12, 1947, there were three males and one female; all the males were displaying and going through courtship antics, one male repeatedly driving the other two away from the female. These goings on apparently annoyed a coot, who burst from the bullrushes with such fury that the ducks took to the air, two males settling again on the water a short distance away, a male and female flying across the marsh.

Canvas-Back--Aythya valisineria (Wilson)

Scarce transient, three records only; March 31, 1940, four males and one female near Wardner; April 9, 1944, two males on Wasa lake; April 19, 1945, five males and five females, apparently paired, on Baynes lake.

Greater Scaup Duck--Aythya marila (Linnaeus)

One positive record, a female collected at Creston, October 10, 1948.

Lesser Scaup Duck--Aythya affinis (Eyton)

Scarce summer visitant. Owing to the difficulty of making positive identification of the greater and lesser scaup in the field, all migration notes, etc. are presumed to have reference to this species.

Migration, spring--April 26, 1937, two pairs, apparently mated, Baynes lake; April 23, 1938, three males and two females, Turtle lake; May 6, 1939, one pair, Columbia lake; April 15, 1940, four males and three females all indulging in courtship displays; March 29, 1942, three males on the Kootenay river near Wardner; May 11, 1943, sixteen males and fourteen females on Baynes lake; April 10, 1946, three males and one female on Wasa lake.

Summer records--May 26, 1940, one male and one female, evidently paired, chased away an odd female; June 28, 1942, seven males and four females diving in a Nymphaea bed on New lake; May 24, 1947, two pairs, evidently mated, on Island pond; June 10, 1947, pair on Turtle lake.

Winter records--January 27, 1943, one male on the Moyie river.

American Golden-Eye--Glaucionetta clangula americana (Bonaparte)

Spring migrant. It is perhaps significant that no males have been recorded in the spring later than April 17, but males of islandica have been noted as late as May 29. In view of the lack of specimens, all nesting notes and records of wintering birds in female plumage will be referred to islandica unless otherwise noted.

Migration, spring--March 28, 1937, four males on Kootenay river near Wardner; April 17, 1938, three females and six males, the latter courting and displaying, on Turtle lake; March 24, 1940, thirty males on Wasa lake which was only partly clear of ice; April 2, 1940, twenty males, four of which were displaying for one female; March 7, 1941, two males on the Kootenay river near Wardner; March 10, 1942, three males on the Kootenay river near Wardner; March 1, 1944, two males on the Moyie river, apparently there was no female present but both males were displaying; March 26, 1945, twenty-five males on Wasa lake.

Migration, autumn--August 13, 1939, collected a young male.

Winter records--February 24, 1939, male with female on Moyie river at Yahk; January 14, 1944, male with female on Moyie river at Aldridge; February 15, 1944, male with three females on Moyie river at Aldridge.

Barrow Golden-Eye--Glaucionetta islandica (Gmelin)

Summer visitant. It is presumed that Barrow golden-eye is the bird breeding in this district, but without specimens, definite proof is lacking. No adult males have been found wintering.

Migration, spring--March 28, 1937, six males on the Kootenay river, lakes, and small ponds still covered with ice; April 3, 1938, four males on Wasa lake; April 16, 1939, eight males and four females, all the males displaying and fighting; April 4, 1940, three pairs on Turtle lake, apparently mated; May 29, 1940, two

males with two females on Turtle lake; March 23, 1941, a male and female on a small pond near the Montana boundary at Newgate.

Migration, autumn--One female collected, September 11, 1937.

Nesting--May 26, 1940, female with seven downy young, on Skookumchuck pond; June 9, 1941, female with thirteen downy young on Columbia lake; June 10, 1942, female with nine young on Turtle lake.

Buffle-Head--Glaucionetta albeola (Linnaeus)

Scarce summer visitant.

Migration, spring--April 3, 1938, twenty males on Wasa lake; May 6, 1939, pair on Columbia lake; March 25, 1940, one male on Rampart pond; April 11, 1940, twelve males and four females, the males were all displaying and quarreling; occasionally one or two of the males would leave the water, circle the pond a few times, swoop down and alight with a splash against another male that was displaying, who would promptly dive. April 12, 1943, four males on Skookumchuck pond; April 9, 1944, fifteen males on Skookumchuck pond.

Migration, autumn--October 27, 1945, one male on Island pond.

Nesting--On the south end of Columbia lake on August 18, 1940, a female with six large young; when approached with the canoe, the young disappeared into a thick growth of round-stem bullrushes and the female swam around the canoe keeping up a continuous hoarse quacking.

Harlequin Duck--Histrionicus histrionicus (Linnaeus)

The only records for the district are, August 29, 1937, female collected on St. Mary lake; May 30, 1940, male collected at Edgewater: September 3, 1940, three seen in female plumage on the south end of Columbia lake.

White-Winged Scoter--Melanitta fusca deglandi (Bonaparte)

One record only, one male and two females on Baynes lake, May 11, 1943.

Ruddy Duck--Erismatura jamaicensis (Gmelin)

Summer visitant. This amazing little duck arrives in the spring after most of the other locally breeding ducks have commenced their nesting, and with such regularity, that in any spring their appearance can be anticipated between May 11 and 15, as is indicated by the following dates for their first spring appearance, given for nine years.

Migration, spring--May 15, 1937, one male in the Cranbrook marsh; May 12, 1940, two males on Turtle lake; May 11, 1941, nine males and six females, all the males performing their extraordinary courtship displays on Turtle lake. At Baynes lake at 11:30 a. m. on May 11, 1943, no ducks were observed, but at 2 p. m. this small lake was seen to be literally covered with ruddy ducks, which were resting as if from a long flight; considerable time was spent making a count of their numbers, which was estimated to be between nine hundred and one thousand, with males about two-thirds in the majority. Next day the host had left, but twenty males and sixteen females remained; the males were carrying on their courtship displays. May 21, 1944, two males and one female on Turtle lake; April 27, 1945, eighteen males and twelve females all feeding on Baynes lake; May 9, 1946, two hundred and sixty-two males on Baynes lake; May 9, 1947, one pair on Turtle lake; April 28, 1948, eighty on Baynes lake, sexes about even.

Migration, autumn--October 27, 1941, two on the Kootenay river near Wardner, one in female plumage the other a male who had about half completed his postnuptial moult; August 19, 1948, two in female plumage on Rampart pond.

Nesting--June 2, 1940, male and female collected, female had an egg in the oviduct.

The large concentrations of ruddy ducks seen on Baynes lake on May 11, 1943 and May 9, 1946, as noted above, would seem to strengthen the theory that has been mentioned elsewhere in connection with the western grebe, that Baynes lake is a resting place for waterfowl using the Crows Nest pass through the Rocky mountains, as a migration route to the Alberta prairies.

American Merganser--Mergus merganser americanus Cassin

Abundant summer visitant, a few remain in the district during winters that have not been severe enough to entirely ice over the Kootenay and Moyie rivers. Columbia lake usually supports several

Fig. 7. Antelope Bush (Purshia tridentata) in Bloom; a Predominant Shrub in the Dry Forest Biotic Area.

Fig. 8. Rocky Mountain Bighorn (Ovis canadensis) Grazing on the Semi-arid Side Hills of the Columbia Valley.

broods, and it is a common sight in a late summer evening to see a party of fishing mergansers working their way along the shore, and when approaching a small, shallow bay, fanning out into a crescent and working toward shore, driving numerous minnows (Richardsonius) and other small fish ahead of them. Suddenly there is a tremendous splashing as the mergansers catch up with the encircled fish, and so vigorous is the attack, that on a quiet evening, the noise made by the diving and splashing can be heard for a considerable distance.

Migration, spring--March 28, 1937, a pair on the Kootenay river, near Wardner; April 14, 1938, two males and three females on the Kootenay river near Wardner; March 31, 1939, a male collected at Dutch creek; March 10, 1940, one male on the Kootenay river near Wardner; March 16, 1941, one male on the Moyie river; March 17, 1942, one male on the Moyie river; March 26, 1948, three males on Columbia lake.

Migration, autumn--November 25, 1939, five in female plumage at Rushmere; October 30, 1942, four in female plumage on Columbia lake.

Nesting--June 16, 1941, female with seven downy young; June 8, 1942, female with seventeen downy young on Columbia lake; June 8, 1947, three females with broods of eleven, nine, and seven downy young; July 12, 1947, female with nine downy young on Columbia lake.

Winter records--December 18, 1939, six on the Moyie river; January 6, 1943, one male and two females on the Moyie river; February 10, 1944, a male and female on the Kootenay river near Wardner.

Red-Breasted Merganser--Mergus serrator Linnaeus

Rare, one male seen on April 21, 1942, at Dutch creek, Columbia lake.

Hooded Merganser--Lophodytes cucullatus (Linnaeus)

Rare, a male and female seen together on Baynes lake on April 19, 1945.

Turkey Vulture--Cathartes aura (Linnaeus)

Regular summer visitant in limited numbers. There seems to be no reason why the vulture should not nest in this district, but so

far there has been no evidence of it.

Migration, spring--April 12, 1940, one at Newgate; May 6, 1941, two at Swansea; April 14, 1943, one at Marysville; May 9, 1944, one at Ta Ta creek; April 20, 1945, two at Cranbrook; April 24, 1946, one at Ta Ta creek; April 29, 1947, two at Kimberley.

Migration, autumn--September 13, 1939, one at Newgate; September 17, 1940, two at Skookumchuck; August 31, 1944, two at Newgate; September 18, 1947, one at Wasa.

Summer records--June 21, 1939, one at Rampart; July 5, 1940, one at Cranbrook; July 1, 1941, one at Cranbrook; July 22, 1947, two at Wasa; July 30, 1948, one at Skookumchuck.

Goshawk--Accipiter gentilis atricapillus (Wilson)

Scarce summer visitant; remains in the district all winter in some numbers, and there is only one nesting record for this area. Two adult males were collected at Mayook on February 8, 1940, and February 2, 1944; an immature male was collected at Cranbrook on November 23, 1939.

Migration, spring--March 24, 1937, adult at Canal Flats; February 23, 1939, adult at Canal Flats.

Migration, autumn--October 22, 1938, adult at Wasa; November 17, 1939, one at Canal Flats; September 28, 1941, one adult at Wycliffe.

Nesting--July 15, 1938, female shot at the nest and four eggs taken from nest by an Indian near Cranbrook, eggs well advanced in incubation.

Winter records--February 15, 1938, adult flying with squirrel in claws near Fort Steele; January 2, 1940, one adult at Skookumchuck; January 15, 1942, one adult at Wycliffe; January 20, 1944, an adult flushed off a mallard duck, Kootenay river bank near Newgate; January 10, 1945, one adult at Jaffray.

Sharp-Shinned Hawk--Accipiter striatus Vieillot

In all probability this hawk is more prevalent in the district than the records actually show, but owing to the difficulty of making positive identifications in the field, only unquestionable

records and specimens collected have been noted.

Spring records--May 6, 1939, adult at Rampart; April 18, 1944, one adult at Fort Steele.

Autumn records--October 13, 1944, adult female collected near Creston; on September 18, 1947, an adult male was found dead on a verandah couch under a window in Cranbrook. Inside the window was a canary in a cage; the hawk, whose stomach was empty, had evidently struck at the canary and killed himself in collision with the glass.

Cooper Hawk--Accipiter cooperii (Bonaparte)

Common summer visitant.

Migration, spring--May 30, 1937, immature male collected at St. Mary lake; April 18, 1938, one adult at Moyie; April 12, 1940, two adults seen together at Newgate; April 5, 1943, one adult in Moyie valley; April 22, 1948, one adult at Canal Flats.

Migration, autumn--September 18, 1938, four in immature plumage at Columbia lake; October 28, 1939, one immature at Fort Steele; August 20, 1940, male of the year collected at Wasa; September 15, 1940, female of the year collected at Cranbrook; September 9, 1941, female of the year collected at Wasa.

Nesting--May 1, 1942, breeding male collected at Wasa; stomach contained remains of Microtus; May 5, a female, collected in the same vicinity at Wasa where the male was taken on May 1, was carrying an egg in her oviduct.

Red-Tailed Hawk--Buteo jamaicensis calurus Cassin

Summer visitant.

Migration, spring--April 10, 1937, three at Perry creek, apparently pairing; April 1, 1938, one, Canal Flats; March 28, 1939, one at Eager; March 31, 1940, two at Wardner; March 28, 1941, one at Goatfell; March 24, 1942, one at Eager; April 5, 1943, one at Wycliffe; April 6, 1944, two at Wasa; March 20, 1945, one at Springbrook.

Migration, autumn--October 12, 1938, one at Wolf Creek; September 13, 1939, two at Cranbrook; September 4, 1942, one at Wasa.

Nesting--A pair nested in a stunted fir tree high up on a cliff overlooking the Columbia river, on the south end of Columbia lake; they were very noisy and called continually. On July 6, 1940, one of the adults was seen to carry what looked like a ground squirrel, (Citellus), to the nest.

Swainson Hawk--Buteo swainsoni Bonaparte

Reported as being formerly common in this district, but it is certainly not so in recent years, for two records only have been obtained since 1937; one on October 7, 1943, when a dark-coloured male was seen sitting on a fence post at Waldo, the other when a pair of very dark birds were seen together at Wasa on May 9, 1947; the female was collected; the largest egg yolk in her ovaries measured a quarter of an inch in diameter.

Rough-Legged Hawk--Buteo lagopus sancti-johannis (Gmelin)

Rare. The only record is provided by a pale female collected near Cranbrook on October 28, 1943; the stomach contained the complete remains of one Microtus.

Golden Eagle--Aquila chrysaetos (Linnaeus)

Resident; of regular occurrence in the district.

Spring and summer records--June 15, 1937, one on St. Mary prairie; May 10, 1938, female shot at Wycliffe; May 1, 1940, one at Skookumchuck; April 17, 1941, one at Skookumchuck; April 5, 1942, one at Yahk; April 1, 1945, one on beach of Wasa lake feeding on a dead male pintail duck.

Autumn and winter records--January 2, 1940, one at Skookumchuck; September 3, 1940, one harassing ducks at Dutch creek, Columbia lake; February 16, 1943, one at Island pond.

Bald Eagle--Haliaeetus leucocephalus washingtoniensis (Audubon)

Resident here in fair numbers, and definitely on the increase in spite of a certain amount of misguided human persecution. They winter regularly in the Kootenay and Moyie valleys, and in severe

Fig. 9. Typical Sub-Alpine Forest Biotic Area.

Fig. 10. Sub-Alpine Forest Biotic Area Gives Way to the Southern Alplands Biotic Area.

winters when little ice-free water remains, they feed on the carcasses of the many deer that are killed each winter by trains and motor traffic on the railroads and highways, augmented by the remains of deer pulled down by coyotes on the ice-covered lakes.

The following notes are thought to be of sufficient interest to report. On March 4, 1940, two immature eagles were chasing a small flock of mallard in some open water on the south end of Columbia lake; the ducks did not seem to be unduly alarmed, flying from one side of the pool to the other when the eagles approached. After an hour of pursuit the eagles had failed to capture a duck or even drive them from the vicinity.

On Jan. 23, 1942, two adults were observed feeding on a deer carcass on Moyie lake; six magpies and five ravens stood around on the ice, keeping at a respectful distance from the feeding eagles. On May 4, 1947, an immature bird, presumably fishing for suckers about a hundred feet off shore on the south end of Columbia lake, fell into the water and was unable to get into the air again; it flopped ashore by beating the water with its wings, and landed in what looked to be a very sodden condition; it remained on the sand spit for two hours preening and drying before it flew off. At dawn on October 1, 1948, the writer was in a "blind" on the south end of Columbia lake; an immature bald eagle was wheeling around at some considerable height. It started descending in sharp spirals to the surface of the water, so close that the draft set up by the wing beats could be felt in the "blind"; the eagle reached into the water several times with one foot and finally came up with a sucker about ten inches long and flew off with the fish dangling from its claw.

Nesting--June 16, 1940, adult on nest in a large fir tree on the east side of Columbia lake; July 26, 1941, three young sitting on limbs of a fir tree in which a nest was situated, east side of Columbia lake; July 3, 1948, a nest in a dead fir tree on a high bank overlooking Columbia lake, one large young was standing in the nest and an adult was perched on a limb close to the nest; it flew off as the nest was approached.

Marsh Hawk--Circus cyaneus hudsonius (Linnaeus)

This hawk is a common migrant in the spring and autumn, but so far no records have been obtained of its nesting in this district, although two birds were seen pairing at Columbia lake.

Migration, spring--April 24, 1938, one female in the Moyie valley; May 6, 1939, three in female plumage at Columbia lake; May 19, 1944, female at Peavine creek; March 16 to April 29, 1945, an adult male was seen continuously around the golf course at Cranbrook;

April 22, 1946, adult male at Ta Ta creek; April 25, 1948, two seen pairing at Columbia lake.

Migration, autumn--September 18, 1937, one immature in Cranbrook; September 21, 1938, four in brown plumage at Columbia lake; October 20, 1940, adult male at Columbia lake; October 8, 1947, adult male at Wasa.

Summer records--May 29, 1946, one adult male at Fort Steele.

Osprey--Pandion haliaetus carolinensis (Gmelin)

Summer visitant throughout the Columbia, Kootenay and Moyie valleys.

Migration, spring--April 10, 1939, one at Columbia lake; April 9, 1941, one, Kootenay river at Skookumchuck; April 21, 1943, one at Yahk; April 17, 1945, one at Creston; April 9, 1948, one over Kootenay river at Skookumchuck.

Migration, autumn--Last seen: October 3, 1939, one over Kootenay river at Skookumchuck; October 17, 1940, one at Cranbrook; September 21, 1941, one at Invermere; September 3, 1942, as the fog cleared away, sixteen ospreys were counted circling around over the water where Dutch creek empties into Columbia lake; September 15, 1945, one at Columbia lake; September 22, 1948, one at Columbia lake.

Nesting--A pair was repairing a nest near Mud lake on April 29, 1938. The nest, which was fifty feet from the ground, at the top of a dead fir tree, was again visited on May 15; little trouble was experienced in climbing the tree, but it was no easy matter to get around the over-hang and reach the top of the nest, which had evidently been used for several seasons. It was composed of large sticks plentifully interlaced with horse manure; the platform was five feet in diameter; the cup, containing one egg, was considerably off centre, and was plentifully lined with fine grasses.

Duck Hawk--Falco peregrinus Tunstall

Occasional visitant. It is generally assumed that when a peregrin falcon strikes its prey in the air, death comes to the stricken almost instantaneously. This may be with smaller victims, but it is not always so when mallard ducks are attacked, as the following notes will show. On September 21, 1940, from a "blind" on the north end of Columbia lake, a duck hawk was seen harassing ducks. The falcon swooped at and struck a mallard, knocking it

into the water from a height of about forty feet; following the duck down and seizing it with its talons, the falcon tried to lift its victim from the water, but failed. As soon as it was released the duck promptly dived, only to be swooped at again when it reappeared on the surface. This was repeated four times, then the falcon abandoned the pursuit and flew away, and when out of sight, the duck left the water and flew across the lake. Next day, in the same spot, the falcon gave an almost identical repeat performance, except, in this case, when the hawk struck the mallard they both fell on a sand spit about two hundred feet in front of the "blind." The interested watcher ran towards the struggling birds anticipating a nice specimen as well as roast duck with one shot, but when still out of range the falcon flew off leaving the duck, which, when released, took to its wings and disappeared into some round-stem bullrushes close by.

Other occurrences in the district are: August 31, 1941, one seen at the north end of Columbia lake; April 9, 1942, one seen at Newgate; May 17, 1942, one at the south end of Columbia lake; July 4, 1942, a peregrin falcon was noted cruising over the beach at the north end of Columbia lake. There were eighteen crows feeding along the water's edge, and when the falcon passed over them, these wily birds made no attempt to fly away, but huddled together in tight formation and remained quite still.

Pigeon Hawk--Falco columbarius sucklei Ridgway

A male collected at Turtle lake on August 28, 1937, as it was "hawking" dragon flies; the remains of several were in the stomach.

Falco columbarius bendirei Swann

April 25, 1937, a female collected near Wardner; August 4, 1940, female collected at Columbia lake.

Falco columbarius richardsonii Ridgway

January 9, 1945, a female collected at Ta Ta creek.

Sparrow Hawk--Falco sparverius sparverius Linnaeus

Common summer visitant. This little falcon arrives with almost clock-like regularity each spring, records for nine years showing

that their first appearance occurred between April 12 and April 28.

Migration, spring--April 20, 1937, two males, St. Mary prairie; April 28, 1938, twenty-three counted at Newgate; April 17, 1939, two males at Cranbrook; April 27, 1941, one male at Newgate; April 16, 1943, one male at Moyie; April 12, 1944, two males at Cranbrook; April 19, 1945, two males at Baynes lake; April 21, 1946, one male at Wasa; April 20, 1947, one male at Wasa.

Migration, autumn--October 21, 1938, one female at Wasa; October 25, 1939, one at Moyie; October 18, 1940, one at Moyie; October 9, 1941, one at Windermere; October 2, 1944, one at Ta Ta creek; October 9, 1946, one at Waldo; October 7, 1948, four at Wasa.

Nesting--April 28, 1937, a pair copulating on the top of a telephone pole at Wasa; July 1, 1938, four young in pin feathers in a cavity in a yellow pine stump. The hole was four feet from the ground, and the cavity was eighteen inches deep. May 24, 1947, a female was seen entering a hole in a dead tamarac tree. Tapping the tree failed to make the bird come out again.

Blue Grouse--Dendragapus obscurus richardsonii (Douglas)

Resident. More or less confined to the Sub-Alpine Forest and Southern Alplands Biotic areas except in the summer, when some breeding birds descend to the valleys to nest.

Nesting--June 28, 1938, female with brood of six chicks at Ta Ta creek; August 4, 1942, female with three large young at Columbia lake. On May 29, 1948, two males were seen to be fighting on the highway south of Kimberley. The car was stopped, and the battle watched for some time; the two cock grouse would rush together and seize each other by the neck, both endeavouring to force the other's neck to the ground, then let go, back up and rush together again. When finally approached they separated reluctantly, one flying away, followed by a female, who up to that moment had been hidden by some weeds at the roadside; the other male with feathers erect walked into some weeds.

Franklin Grouse--Canachites franklini (Douglas)

Resident, and formerly plentiful in the Sub-Alpine Forest Biotic area, but now relatively scarce. It is difficult to account for this decline in numbers, for few are shot each year by hunters.

Nesting--July 23, 1946, female brooding four chicks which flew up into a spruce tree when the female was disturbed; this was on

Maus creek at an elevation of 4900 feet. June 23, 1947, on Perry creek, elevation 5000 feet, a female found incubating; she would not leave the nest and had to be lifted off to count the nine eggs which were just hatching. The nest was under a small alpine fir, (Abies lasiocarpa), and was merely a slight depression in the ground lined with fir needles.

Ruffed Grouse--Bonasa umbellus phaios Aldrich and Friedman

Resident throughout the Dry Forest and Sub-Alpine Forest Biotic areas; in spite of periodic closed seasons they have been getting progressively scarcer during the last ten years.

Nesting--On June 12, 1945, an incubating bird was almost stepped on and flushed from a nest under a spruce tree in the Moyie valley; as the bird left the nest the eggs were plainly visible for an instant, but as the leaves, disturbed by the draft from her wings settled over the nest, the eggs, seven in number, were completely covered. The nest was in a depression, in the accumulated spruce needles, that had been filled with poplar leaves, many of which had been deposited around the nest. May 3, 1947, nest containing six eggs at Columbia lake; on May 24 there were nine eggs being incubated.

White-Tailed Ptarmigan--Lagopus leucurus leucurus (Richardson)

Restricted to the Southern Alplands Biotic area. A female and one fully grown young were collected above the Paradise mine, at an elevation of 9000 feet on August 25, 1944. Their stomachs contained the leaf galls of arctic willow (Salix nivalis), and leaves of alpine buttercup (Ranunculus saxicola). (See also "Flora and Fauna of the Paradise Mine Area, British Columbia," Carl and Hardy, B. C. Prov. Museum Report for 1944, Victoria, 1945.)

Sharp-Tailed Grouse--Pediocetes phasianellus columbianus (Ord)

Reported as having been formerly abundant in the district, but now, even after a number of years of protection, they are represented by only a few flocks restricted to the Kootenay valley between Canal Flats and the International Boundary. On May 29, 1948, while driving a car across the Skookumchuck prairie, two sharp-tails were seen on the highway. Approaching closer, it was seen that one of the grouse had been killed by a car, and the

other was dancing around the dead bird as if trying to arouse it. The live bird was driven away and the other removed.

European Partridge--Perdix perdix (Linnaeus)

Introduced on the St. Mary prairie prior to 1937; none seen since 1940.

Ring-Necked Pheasant--Phasianus colchicus Gmelin

An introduction at Ta Ta creek and Wasa was not successful.

Sandhill Crane--Grus canadensis (Linnaeus)

Scarce migrant. September 20, 1946, six on Skookumchuck prairie; May 16, 1948, one at the south end of Columbia lake.

Sora--Prozana carolina (Linnaeus)

Summer visitant to suitable marshes in the district. The earliest date recorded in the spring is May 23, 1937.

Nesting--June 5, 1937, nest with eight eggs in the Cranbrook marsh.

American Coot--Fulica americana Gmelin

Abundant summer visitant.

Migration, spring--April 22, 1937, many in Cranbrook marsh; April 13, 1940, twenty counted, others heard in Cranbrook marsh; April 4, 1941, three at Island pond; April 13, 1942, eight in Cranbrook marsh; April 9, 1943, seven at Baynes lake; April 19, 1945, eight at Baynes lake; April 21, 1946, approximately two hundred on Wasa lake; April 22, 1948, one at Island pond.

Migration, autumn--September 22, 1937, a large raft at the south end of Columbia lake, must have contained at least a thousand; November 28, 1939, four at Baynes lake; September 4, 1940, a raft of tightly assembled coot on Columbia lake, covering about an

Fig. 11. Sub-Alpine Forest Biotic Area; Lyall's Larch is the Predominant Tree Species.

Fig. 12. Columbia Lake with the Purcell Range in the Background.

acre of water; November 1, 1945, six on Baynes lake; November 20, 1947, two on Baynes lake.

Nesting--May 24, 1937, examination of fifteen nests in the Cranbrook marsh revealed an average of seven eggs to a clutch; all in an advanced state of incubation; June 9, 1938, approximately twenty pairs nested in Cranbrook marsh, some eggs were hatching; September 3, 1948, in a marsh near Wardner, an adult was seen with one young that still had the red coloration on head and neck.

Semipalmated Plover--*Charadrius hiaticula* Linnaeus

A scarce autumn transient. No spring records.

Migration, autumn--September 6, 1937, female collected at Columbia lake; August 27, 1939, male collected from four birds on Columbia lake; September 9, 1939, three on Columbia lake; August 9, 1942, six on Columbia lake.

Killdeer Plover--*Charadrius vociferus* (Linnaeus)

Common summer visitant.

Migration, spring--March 27, 1937, three at Cranbrook; April 1, 1938, one at Cranbrook; March 16, 1939, two at Cranbrook; March 25, 1940, two at Cranbrook; March 7, 1941, one at Cranbrook; March 8, 1942, two at Cranbrook; March 20, 1943, one at Cranbrook; March 22, 1944, one at Cranbrook; March 22, 1945, two at Cranbrook; March 31, 1946, one at Cranbrook; March 21, 1947, two at Wardner.

Migration, autumn--October 16, 1938, four at Columbia lake; September 15, 1940, fifteen at Turtle lake; September 13, 1941, four at Rampart pond; September 30, 1948, six at Columbia lake.

Nesting--July 1, 1937, two pairs with downy young at Jap lake; May 21, 1938, four eggs, well incubated, in a nest on an old sawdust pile; May 14, 1939, four eggs, well incubated, in a nest on the beach of Columbia lake; May 12, 1940, four eggs in a nest at Turtle lake, one egg hatching.

Golden Plover--*Pluvialis dominica dominica* (Müller)

Scarce autumn transient. No spring records.

September 10, 1939, male collected at Columbia lake; September 26, 1939, female collected on Skookumchuck prairie; September 30, 1948, two at Columbia lake, female collected.

Black-Bellied Plover--Squaterola squaterola (Linnaeus)

Scarce autumn transient. No spring records.

September 22, 1938, male collected at Columbia lake; September 17, 1942, one seen at Waldo; September 28, 1947, three at Columbia lake, female collected.

Wilson Snipe--Capella gallinago delicata (Ord)

Summer visitant, wintering in the district where conditions permit.

Migration, spring--March 31, 1937, two in St. Joseph creek; April 18, 1941, one in Curzon meadows.

Migration, autumn--September 7, 1940, one on shore of Rampart pond.

Nesting--May 1, 1937, one heard "bleating" in the Cranbrook marsh, and on May 24, one ran out from some sedge and stunted black birch on the south side of the marsh; it occasionally lay down with spread out wings and tail, making a squealing noise, which apparently attracted its mate to the scene, when they both rose in the air and circled around. The nest could not be located.

Winter records--February 9, 1938, one in Palmer Bar creek; February 3, 1939, one in Palmer Bar creek; January 26, 1941, one in Palmer Bar creek; November 22, 1947, one at south end of Columbia lake; January 9, 1948, one at south end of Columbia lake.

Long-Billed Curlew--Numenius americanus parvus Bishop

Rare, one record only and that on June 8, 1945, when one was seen on the Skookumchuck prairie; it was quite tame and could be approached to within fifty or sixty feet when it flushed, and flew across the Kootenay river and settled on a sand bar.

Upland Plover--Bartramia longicauda (Bechstein)

Reported from Newgate and included in this list on the strength of a specimen shown me by Allan Brooks on June 26, 1919, which he had collected at Newgate on May 30 of the same year.

Spotted Sandpiper--Actitis macularia (Linnaeus)

Summer visitant.

Migration, spring--May 23, 1937, three at Rampart pond; May 21, 1938, May 18, 1939, four at Jap lake; May 11, 1941, two near Little Bull river.

Migration, autumn--September 6, 1937, three at Turtle lake; September 2, 1940, two at Columbia lake; September 2, 1941, three at Columbia lake; September 28, 1947, two at Columbia lake; September 30, 1948, three at Columbia lake.

Nesting--July 1, 1937, two nests at Jap lake each contained four well incubated eggs; July 14, 1937, downy young at Jap lake; July 25, 1941, adult with three half grown young at Columbia lake.

Solitary Sandpiper--Tringa solitaria solitaria Wilson

Specimen records--July 13, 1937, female collected at Rampart pond, ovaries contained small egg yolks; July 18, 1937, male collected in Cranbrook marsh, testes large; July 30, 1937, non-breeding female collected at Rampart pond; August 7, 1937, eight at Turtle lake, immature female collected; August 13, 1937, four at Turtle lake, immature male collected; May 7, 1939, male with testes very large collected at Columbia lake.

Tringa solitaria cinnamomea (Brewster)

Specimen records--July 17, 1937, female collected at Turtle lake, no indications of having bred; July 30, 1937, male collected at Rampart pond, no indications of having bred; August 31, 1937, male collected at Rampart pond, no indications of having bred.

Greater Yellow-Legs--Totanus melanoleucus (Gmelin)

An uncommon autumn, and scarce spring, transient. No evidence of nesting in the district.

Migration, spring--April 10, 1942, one at Skookumchuck pond; April 14, 1943, one in Cranbrook marsh.

Migration, autumn--September 22, 1939, one at Yahk; August 10, 1948, three at Rampart pond.

Summer records--July 17, 1937, post-breeding female collected in Cranbrook marsh; July 20, 1940, one at Columbia lake; July 6, 1947, three at Rampart pond.

Lesser Yellow-Legs--Totanus flavipes (Gmelin)

Scarce autumn transient. No spring records.

Migration, autumn--August 4, 1937, female collected at Rampart pond; September 18, 1938, three at Columbia lake; August 27, 1939, post-breeding female collected at Columbia lake; September 3, 1943, three at Jap lake, post-breeding female collected; August 27, 1944, three at Jap lake, male collected.

Summer records--July 20, 1940, one at Columbia lake.

Pectoral Sandpiper--Erolia melanotus (Vieillot)

Common autumn transient. No spring records.

Migration, autumn--October 16, 1937, three at Columbia lake; October 17, 1938, eight at Columbia lake; September 21, 1940, four at Columbia lake; September 28, 1947, three at Columbia lake, September 30, 1948, ten at Columbia lake.

Baird Sandpiper--Erolia bairdii (Coues)

Autumn transient. No spring records.

Migration, autumn--August 4, 1937, three at Rampart pond, male collected; September 22, 1938, fifteen at Columbia lake; August 6, 1939, three at Rampart pond, female collected; September 7, 1940,

six at Rampart pond, female collected; August 31, 1941, a considerable migration in progress on Columbia lake, thirty-three being counted at various places along the shore; September 3, 1945, five at the south end of Columbia lake; September 30, 1948, one in company with ten pectoral sandpipers, on Columbia lake.

Least Sandpiper--Erolia minutilla (Vieillot)

Autumn transient. No spring records.

Migration, autumn--specimen records--July 7, 1937, female at Rampart pond; July 24, 1937, male at Jap lake; August 13, 1937, female at Turtle lake; August 14, 1937, male at Rampart pond; September 5, 1937, male at Turtle lake; August 6, 1939, male at Rampart pond.

Dowitcher--Limnodromus griseus griseus (Gmelin)

Autumn transient. Scarce in the spring.

Migration, spring--May 18, 1947, two in the Cranbrook marsh.

Migration, autumn--September 23, 1937, two at Turtle lake, female collected; September 10, 1939, eight at Pollen's slough, female collected; September 6, 1940, two at Turtle lake; October 1, 1944, twenty at the south end of Columbia lake; October 11, 1947, nineteen at the south end of Columbia lake.

Summer records--On July 30, 1937, a post-breeding female in spring plumage was collected at Rampart pond.

Measurements of three specimens:

No. 109	♀	Length	11 in.	Length of bill	69 mm.
No. 143	♀	Length	11 in.	Length of bill	64 mm.
No. 256	♀	Length	11 in.	Length of bill	71 mm.

Semipalmated Sandpiper--Ereunetes pusillus (Linnaeus)

Scarce autumn transient. No spring records. The following are specimen records. August 10, 1937, female at Rampart pond; September 4, 1937, female at Turtle lake; August 6, 1939, female at Rampart pond; August 27, 1939, one female at Columbia lake.

Western Sandpiper--Ereunetes mauri Cabanis

One definite record. A female collected from amongst a small group of semipalmated sandpipers on August 27, 1939, at the north end of Columbia lake.

Marbled Godwit--Limosa fedoa (Linnaeus)

One record only. A female collected at the north end of Columbia lake on August 31, 1941.

Sanderling--Crocethia alba (Pallas)

Uncommon autumn transient. Three females collected from a group of six on September 15, 1940, at the north end of Columbia lake; September 6, 1946, one seen in a pool of water, left by heavy rain, at the junction of Garden Avenue and Baker Street, in Cranbrook.

Wilson Phalarope--Steganopus tricolor Vieillot

Summer visitant. It appears probable that these birds leave the district as soon as the young are old enough to fly, for none have been noted later than July 12, when in 1937 an adult with two full-grown young were seen in the Cranbrook marsh.

Migration, spring--May 16, 1937, two pairs on St. Mary prairie; May 24, 1938, two females and a male, Cranbrook marsh; May 12, 1940, pair at Turtle lake; April 19, 1942, female in the Goatfell meadows; May 9, 1947, female at Westport.

Last seen--July 12, 1937, a male with two full-grown young in the Cranbrook marsh; July 10, 1947, one in Cranbrook marsh.

Nesting--On June 5, 1937, a male was flushed from four well incubated eggs in the Cranbrook marsh; the nest was a small depression scooped out on a slight prominence in a flooded meadow, and well lined with fine grasses. The nest was quite exposed, but surrounded by a meager growth of Carex. Again on June 11, 1939, a male was flushed from four incubated eggs in the Cranbrook marsh; the nest was similar in every respect to the one found in 1937, except that several black tern were nesting in the immediate vicinity.

Northern Phalarope--Lobipes lobatus (Linnaeus)

Transient, less common in the spring than in the autumn.

Migration, spring--May 22, 1938, female collected at Turtle

lake; May 19, 1939, two males and two females at Turtle lake.

Migration, autumn--September 11, 1937, three at Turtle lake, female collected; August 17, 1940, eighteen feeding on floating insects in the middle of Columbia lake; August 31, 1941, two at Columbia lake; August 20, 1944, two at Rampart pond; August 10, 1948, two on Rampart pond.

Herring Gull--*Larus argentatus smithsonianus* (Coues)

Summer visitant to the larger lakes in the district. Adults and birds in first and second year plumage are present on Columbia lake each summer, but there is no reason to suppose that they nest anywhere in the district.

Migration, spring--April 9, 1940, three adults on Columbia lake; March 25, 1941, six adults on Columbia lake; May 4, 1942, two adults on Columbia lake.

Migration, autumn--September 15, 1937, two adults and a bird of the year on Columbia lake; September 18, 1938, ten adults and two birds of the year; September 10, 1939, eight adults, three second year birds and two first year birds; October 7, 1940, four adults and two second year birds; October 1, 1944, five adults; October 28, 1945, two adults and three birds of the year; October 1, 1948, one adult and one bird of the year.

Summer records--August 14, 1937, three adults at Wasa lake; June 12, 1938, two adults at Columbia lake; May 4, 1941, three adults at Columbia lake.

Winter records--November 10, 1946, two first year birds at Columbia lake.

California Gull--*Larus californicus* Lawrence

An occasional visitant to Columbia lake.

October 13, 1946, one adult at Columbia lake; September 28, 1947, one bird of the year; October 1, 1948, one adult and one bird of the year.

Ring-Billed Gull--*Larus delawarensis* Ord

Summer visitant. This gull can be found on Columbia lake during the period that it is free of ice.

Migration, spring--May 6, 1939, two adults on Columbia lake; April 5, 1940, one adult on Moyie lake; May 5, 1945, three adults and three immatures on Columbia lake.

Migration, autumn--October 27, 1937, two adults at Columbia lake; September 22, 1938, four immatures at Columbia lake, one collected; October 7, 1940, three adults at Columbia lake; October 1, 1944, two adults and three immatures; October 28, 1945, three adults on Columbia lake; October 1, 1948, three adults on Columbia lake; November 10, 1948, two adults at Columbia lake.

Summer records--June 12, 1938, one adult and one immature; July 25, 1941, one adult and two immatures; August 15, 1940, three immatures; September 2, 1944, twelve immatures, one collected. All the above summer records were obtained at Columbia lake.

Bonaparte Gull--*Larus philadelphia* (Ord)

Occasional transient, none have been noted since 1944.

Migration, spring--May 6, 1939, six adults on Columbia lake; June 9, 1941, two adults and an immature, the latter collected, on Columbia lake.

Migration, autumn--September 22, 1940, four immatures at Columbia lake; September 1, 1941, five immatures on Columbia lake; August 9, 1942, six immatures at Columbia lake; August 5, 1944, four immatures at Columbia lake.

Common Tern--*Sterna hirundo* Linnaeus

Transient. Scarce in the spring.

Migration, spring--May 6, 1939, two adults at Columbia lake.

Migration, autumn--September 1, 1941, male collected at Columbia lake; September 5, 1942, three at Columbia lake; October 1, 1944, female collected at Columbia lake; October 28, 1945, five at Columbia lake; August 28, 1948, thirty were counted at the south end of Columbia lake. A family of mergansers were fishing in the shallow water in the manner peculiar to these ducks,

viz: swimming towards the shore in crescent formation with heads submerged; the tern were circling above the mergansers and diving for the small fish as they were driven shorewards.

Arctic Tern--Sterna paradisaea Pontoppidan

One record only. On September 30, 1944, a male was collected at the south end of Columbia lake; it was with two common tern.

Black Tern--Chlidonias nigra (Linnaeus)

Regular summer visitant. One colony has nested for many years in the Cranbrook marsh. Apparently, as soon as the young are able to fly, the tern leave the vicinity of the nesting grounds and disperse throughout the district, and can be seen singly, or in twos and threes, frequenting small lakes known to contain minnows. The regularity with which they reach their nesting grounds each spring is remarkable, as is indicated by the dates given under spring migration. Migration from this district in the autumn occurs at an early date, as none have been seen after July 24.

Migration, spring--The following dates refer to the tern's arrival at the nesting grounds in the Cranbrook marsh: May 20, 1937; May 24, 1938; May 20, 1939; May 20, 1940; May 26, 1941; May 28, 1944; May 31, 1945; May 25, 1947, May 26, 1948.

Migration, autumn--Last seen: July 24, 1938, McRain lake; July 1, 1942, Cranbrook marsh; July 13, 1944, Island pond; July 19, 1948, Cranbrook marsh.

Nesting--On June 5, 1937, nineteen nests were examined in the Cranbrook marsh; ten nests contained three eggs and nine had two. The nests were in close proximity, and in each case consisted of a small amount of green vegetable matter placed in a small depression, on spots that were only slightly elevated above the surrounding water level in a grassy situation in the marsh.

Mourning Dove--Zenaidura macroura marginella (Woodhouse)

Regular summer visitant in the Dry Forest Biotic area. In the autumn, quite large concentrations can be seen along certain sections of the highway. The doves are attracted there by the stinking clover (Cleome serrulata), which grows along the roadside, the bean-like seeds of which evidently form an important source of

food just prior to the autumn migration.

Migration, spring--May 26, 1937, a pair at Wardner; May 22, 1938, a pair at Cranbrook; May 27, 1940, a pair at Newgate; May 8, 1942, one at Cranbrook; May 3, 1943, one at Newgate; May 21, 1945, one at Cranbrook; May 2, 1947, one at Skookumchuck prairie.

Migration, autumn--September 6, 1937, eight at Eager; September 13, 1937, eight at Eager; September 20, 1941, nine at Wycliffe; September 17, 1947, thirty-two in wheat stubble at St. Mary Mission.

Summer record--In the evening of July 1, 1941, it was estimated that there were six or eight doves calling from the dead trees on the dry hillsides in a small burned-off valley just west of Cranbrook. The long-drawn mournful notes continued until daylight had almost faded.

Nesting--May 26, 1937, a pair was collected near Wardner; the female had a large egg in the oviduct.

Screech Owl--Otus asio macfarlanei (Brewster)

Scarce, only one record. On October 27, 1941, a dead bird found on the highway near Wardner was identified as macfarlanei.

Horned Owl--Bubo virginianus (Gmelin)

Occurs throughout the district. Appears to fluctuate in numbers from year to year.

Specimen records--June 10, 1938, a medium dark male in breeding condition, at St. Mary lake, Columbia Forest Biotic area; November 7, 1938, a very dark female near Cranbrook; March 6, 1944, a very pale female near Wasa; the largest egg yolk in ovaries measured 6 mm.

Summer records--June 10, 1938, male collected; May 27, 1945, two heard calling at Columbia lake.

Snowy Owl--Nyctea scandiaca (Linnaeus)

Occasional winter visitant.

Winter records--January 1, 1937, one on the St. Mary prairie;

Fig. 13. The Cranbrook Marsh: Nesting Site of Black Tern, Yellow-headed Blackbird, and Wilson Phalarope.

Fig. 14. Baynes Lake, a Nesting Place for Migrating Waterfowl. The Pass Through the Rockies is Shown in the Centre of the Photograph.

November 30, 1942, one seen at Wasa; December 4, 1942, a male collected at Wasa. This may have been the same bird as was seen at Wasa on November 30; it was very emaciated and had nothing in the stomach.

Hawk Owl--Surnia ulula caparoch (Müller)

Scarce, but reported as being formerly a regular autumn transient. Mr. John Sowerby of Wasa has two mounted specimens collected in 1926; he reports that prior to 1927 several used to show up each year during autumn migration, but none have been seen for the past fifteen years. A female was collected at Parson in the Columbia valley on October 30, 1948.

Pygmy Owl--Glaucidium gnoma (Wagler)

Winter visitant. This little owl's appearance in the early winter is usually synchronized with the arrival of the large flocks of bohemian waxwings that winter here. It is known that the pygmy owl preys on these waxwings.

Autumn and winter records--September 19, 1937, two at McBain lake; November 26, 1942, one at Cranbrook; December 29, 1939, male collected at Peavine creek; January 16, 1940, male collected at Westport; February 8, 1942, one at Peavine creek.

Burrowing Owl--Speotyto cunicularia hypugaea (Bonaparte)

One record only; one picked up dead in the road at Ta Ta creek; sex indeterminable.

Great Gray Owl--Strix nebulosa nebulosa Forster

An occasional winter visitant. Seen only during the winter of 1938-39. November 10, 1938, female collected at Invermere; the bird was sitting on a muskrat's house. February 24, 1939, one sitting on a telephone pole near Moyie; February 27, 1939, one seen in the same vicinity as on February 24; in all probability the same bird.

Short-Eared Owl--Asio flammeus flammeus (Pontoppidan)

Scarce transient. No spring records in this district.

Migration, autumn--September 22, 1938, female collected at the north end of Columbia lake; a male shot by Mr. Offin of Cranbrook on St. Joseph creek; he stated that he had counted fifteen. September 19, 1947, one found in Cranbrook with a broken wing; had probably been in contact with telephone wires.

Saw-Whet Owl--Cryptoglaux acadica acadica (Gmelin)

Scarce visitant. One record only. November 20, 1945, one picked up dead at Wardner; it was too decomposed for determination of sex.

Nighthawk--Chordeiles minor (Forster)

Common summer visitant. No specimens have yet been obtained of C. m. hesperis which is said to occur in the south-eastern section of this district (Munro and Cowan 1947), therefore all sight records are referred to C. m. minor.

Migration, spring--June 5, 1937, one over Cranbrook; June 19, 1939, a great many passing north over Skookumchuck prairie, sixty-three were counted; June 9, 1940, one in the Moyie valley; June 8, 1941, two at Columbia lake; June 11, 1942, large number flying north at Wardner, thirty-two were counted; June 15, 1943, four at Waldo; June 5, 1944, three over Cranbrook; June 13, 1945, six over Cranbrook; June 11, 1947, five at Rampart; June 13, 1948, twenty at Turtle lake.

Migration, autumn--September 16, 1937, two over Cranbrook; September 9, 1940, four at Turtle lake; September 15, 1941, six over Skookumchuck prairie; September 12, 1942, two over Cranbrook; September 13, 1944, a very large migration passing down the Kootenay river; it was estimated that there were at least a hundred; September 10, 1945, eight over Cranbrook; September 9, 1947, four over Cranbrook; September 14, 1948, one over Cranbrook.

Nesting--At Turtle lake, a nighthawk was flushed from two eggs lying on some rotten wood beside an old stump on July 22, 1947.

Black Swift--Nephoecetes niger borealis (Kennerly)

Occasional summer visitant. It is quite possible that this swift visits the district more often than records would indicate, for it would seem that it is only when the skies are lowering and thunder threatening that these birds appear, no doubt following closer to the earth the insects on which they feed, and it is quite possible that on many occasions they could be in the district but flying so high as to escape notice. On the afternoon of June 9, 1938, when a thunder storm was threatening, a flock of about one hundred swifts suddenly appeared flying over the Cranbrook marsh; they remained circling around for two hours, evidently feeding on some low flying insects, and then just as suddenly disappeared. A male was collected and found to be in breeding condition. Other records are: June 27, 1943, two flying high at Vermilion; June 28, 1947, one very high over Cranbrook.

Vaux Swift--Chaetura vauxi (Townsend)

Occasional summer visitant. Only five records for this district, as follows: May 16, 1940, seven flying north at Wycliffe; June 9, 1941, twenty-two circling around over the mouth of Dutch creek, Columbia lake; May 7, 1945, one flying up the Moyie river at Aldridge; June 29, 1947, one flying over Kimberley.

Black-Chinned Hummingbird--Archilochus alexandri (Bourcier and Mulsant)

Scarce summer visitant. On May 28, 1949, a male was seen in Kimberley.

Rufous Hummingbird--Selasphorus rufus (Gmelin)

Common summer visitant. The latest summer record for a male seen in this district was obtained on July 10, 1940. In this respect it might be interesting to add that in thirty-three years in the Kootenays, the latest summer date ever recorded for a rufous hummingbird in male plumage was July 12, 1916, on the Arrow lakes.

Migration, spring--May 15, 1937, one male at Cranbrook; May 13, 1940, three males in Cranbrook; May 21, 1941, one male at

New lake; May 19, 1942, one male in Cranbrook; May 12, 1944, one male in Cranbrook; May 5, 1945, one male at Columbia lake; May 15, 1947, one male in Cranbrook.

Migration, autumn--August 10, 1944, one in female plumage in Cranbrook; September 5, 1946, one in female plumage in Cranbrook; September 6, 1948, one in female plumage at Columbia lake.

Nesting--June 20, 1937, two young with pin feathers in a nest on a spruce limb four feet from the ground; the cup-like nest had been constructed directly over the remains of two other nests, which, judging by their flattened condition, had been used in previous seasons.

Calliope Hummingbird--Stellula calliope (Gould)

Scarce summer visitant. On June 2, 1937, a male was seen near Canal Flats.

Belted Kingfisher--Megaceryle alcyon (Linnaeus)

Regular summer visitant, wintering occasionally on the Kootenay river and in the Moyie river valley.

Migration, spring--May 5, 1937, one at Wasa; May 6, 1939, three at Columbia lake; April 21, 1943, one on the Moyie river; April 26, 1946, two at Wasa; April 8, 1948, one on the Elk river near Fernie.

Migration, autumn--October 25, 1939, one on the Moyie river; October 28, 1945, one at Columbia lake; September 23, 1946, two at Wasa; September 22, 1947, one at Cranbrook.

Winter records--November 13, 1941, one on the Moyie river; December 18, 1941, one on Palmer Bar creek; January 24, 1940, one on the Moyie river; February 22, 1944, one on the Kootenay river near Fort Steele; March 9, 1945, one on Palmer Bar creek.

Nesting--May 26, 1937, a pair were nesting in a sandy cut-bank overlooking Hahas lake. The bank was about twelve feet high and was also occupied by a nesting colony of rough-winged swallows. The hole leading to the nest was situated two feet from the top of the bank, and led slightly upwards for a distance of four feet; at the end of the hole there was an enlarged chamber containing seven slightly incubated eggs. The depression in the sand containing the eggs was scantily lined with root fibres, but

whether this was accidental or by intent, was not known, as the sand through which the tunnel had been excavated was a mass of small roots.

Red-Shafted Flicker--Colaptes cafer collaris Vigors

Common summer visitant, wintering regularly in and around Cranbrook.

Migration, spring--March 28, 1937, one at Wardner; April 3, 1938, two in Cranbrook; April 6, 1939, two at Wasa; March 31, 1940, three at Wasa; March 23, 1941, one in Cranbrook; March 29, 1944, two in Cranbrook.

Winter records--October 29, 1937, one at Fort Steele; November 25, 1939, one in Cranbrook; December 28, 1942, two in Cranbrook; January 27, 1943, one in Cranbrook; February 1, 1945, two in Cranbrook.

Nesting--May 24, 1939, a pair feeding young in a hole in a dead fir tree, ten feet from the ground; June 1, 1942, a female incubating in a cavity in a rotten stump, six feet from the ground.

Pileated Woodpecker--Ceophloeus pileatus picinus (Bangs)

Resident and fairly common in the Kootenay and Columbia valleys. It is thought that there has been a noticeable increase in their numbers during the last six years.

Summer records--May 8, 1937, one at Wasa; May 6, 1939, a pair excavating nest hole; August 31, 1941, two at Dutch creek; June 19, 1940, pair at Columbia lake; July 6, 1944, pair at Columbia lake; May 27, 1945, pair excavating nest hole; they were very noisy.

Winter records--September 21, 1945, one in Cranbrook; October 9, 1944, one on Mount Baker; November 6, 1944, one at Dutch creek; December 12, 1946, one at Wasa; January 6, 1943, one at Goatfell; February 1, 1948, one at Columbia lake; March 26, 1948, pair at Columbia lake.

Nesting--June 27, 1945, evidently incubating in a hole in a dead tamarack tree, 30 feet from the ground, as the woodpecker could be flushed by tapping the tree. July 1, 1947, both birds feeding young that were in a hole in an aspen poplar, 25 feet from the ground.

Lewis Woodpecker--Asyndesmus lewis (Gray)

Summer visitant to the logged over areas in the Kootenay and Columbia valleys.

Migration, spring--May 2, 1937, two at Newgate; May 1, 1938, one at Newgate; May 2, 1939, eight counted between Springbrook and Canal Flats; May 10, 1940, one at Newgate; May 7, 1942, one at Skookumchuck; May 16, 1943, two at Newgate; May 7, 1944, two at Springbrook; May 4, 1945, two at Canal Flats; May 12, 1947, four at Newgate.

Migration, autumn--September 2, 1940, three at Wardner; September 25, 1941, one at Wardner.

Nesting--May 14, 1940, a pair visiting a nest hole in a dead yellow pine; July 8, 1943, a pair feeding young in a nest in a telephone pole at Jaffray; the hole was twelve feet up on the pole. On May 24, 1947, nine pairs were counted between Springbrook and Canal Flats. One of these woodpeckers was seen flying straight up in the air for about fifty feet, and then swooping down and past another that was sitting on a tamarack limb; this aerial manoeuvre was repeated four times, he then settled on the limb beside the female and coition took place.

Yellow-Bellied Sapsucker--Sphyrapicus varius nuchalis Baird

Common summer visitant to the river valleys and bench-lands where aspen poplar predominates. It would appear that this sapsucker leaves the district very soon after nesting, as the latest record obtained was on July 25, 1937, when a juvenile was collected.

Migration, spring--May 2, 1937, two males and one female pairing; April 15, 1938, male at Wasa; April 23, 1939, one male at Columbia lake; April 17, 1941, one male at Skookumchuck; April 9, 1942, two males at Waldo; April 13, 1947, one male at Columbia lake; April 27, 1948, one male at Fort Steele.

Nesting--May 28, 1937, a nest containing five eggs in a hole, fifteen feet from the ground in a dead aspen. The eggs were lying on rotten wood thirteen inches below the entrance hole. June 5, 1942, a pair feeding young in a dead aspen. The young could be heard "hissing." The entrance hole was nine feet from the ground. May 4, 1947, nest hole being bored in a green aspen, thirty-five feet from the ground. The work must have been well under way, as

Fig. 15. Nest of Red-necked Grebe at Rampart Pond; One Young in the Water, One Egg Not Yet Hatched. (July 12, 1948.)

Fig. 16. An Incubating Bittern with Wings Spread and Bill Poised Preparing to Defend its Nest.

a considerable number of chips lay at the base of the tree. It appeared as if the female was doing most of the excavating, for the male was often seen flying back and forth from the tree, while the tapping inside continued. July 3, 1948, young could be heard "squeaking" in a nest in a green aspen, eight feet from the ground. The male was seen to visit the nest several times with food; the female was not seen.

Williamson Sapsucker--Sphyrapicus thyroideus nataliae (Malherbe)

Summer visitant to the southern part of the district. This sapsucker has not been noted further north than Cranbrook. It appears to be confined to the Dry Forest Biotic area that has a predominent growth of western larch, (tamarack), (Larix occidentalis). Both in 1937 and 1938 a pair nested on a dry "tamarack ridge" near Cranbrook, at an elevation of approximately 4000 feet. Subsequent to this, the area was logged over, and thereafter the sapsuckers were not seen again in the vicinity.

Nesting--July 24, 1937, both male and female were carrying food to a young one that was clinging to a limb of a tree. The tree, a live tamarack, had a hole in it about twenty-eight feet from the ground, which had apparently been used as a nesting-hole, as the bark directly beneath the hole showed considerable wear. The young bird, a female, was collected. May 14, 1938, the same locality in which the pair nested as of July 24, the previous year, a dry "tamarack ridge" near Cranbrook, was again visited, and it was not long before the male sapsucker was heard, and then seen flying to a hole about thirty feet up in a live tamarack tree; he remained there for a moment and seemed to pass food to a bird inside the hole, and it was presumed that he was feeding his incubating mate.

Other summer records--June 20, 1943, an adult male on Mount Baker at an elevation of about 4500 feet; July 10, 1947, an immature bird drinking at a bird-bath in a garden in Cranbrook.

Hairy Woodpecker--Dryobates villosus monticola Anthony

Resident in the Dry Forest Biotic area and at least the lower levels of Sub-Alpine Biotic area.

Summer records--April 11, 1937, three males in a burned-off area near Canal Flats; May 24, 1938, a pair at New lake; June 16, 1940, a pair nesting at Columbia lake; July 12, 1944, a male on

Maus creek, at an elevation of 5500 feet; August 15, 1943, a female on Mount Baker; September 6, 1948, female in Cranbrook.

Winter records--October 29, 1937, a male near Canal Flats; November 12, 1939, a male and female in Cranbrook; December 24, 1943, a male near Moyie; January 20, 1944, a male and female in Cranbrook; February 10, 1947, a male in Cranbrook; March 21, 1937, a male collected near Bull river.

Nesting--June 16, 1940, a nest in a hole in a dead aspen, four feet from the ground. The young were very noisy and were being fed by both parents.

Downy Woodpecker--Dryobates pubescens leucurus (Hartlaub)

An uncommon summer visitant. It is doubtful if they winter regularly in this district; the latest autumn record is for November 11, 1940, when a male was seen in Cranbrook.

Migration, spring--May 5, 1937, a pair in breeding condition collected near Wardner; April 3, 1942, a male in Cranbrook; April 4, 1948, a male in Cranbrook.

Migration, autumn--November 3, 1940, a female near Kimberley; November 11, 1940, a male in Cranbrook, in company with a hairy woodpecker; October 23, 1942, one in Cranbrook; September 28, 1947, a male at Canal Flats; September 3, 1948, a male at Waldo.

Nesting--May 31, 1938, a pair copulating at Peckham's lake; June 19, 1942, a pair feeding young at Peckham's lake. The nest hole was in an aspen poplar, about twenty feet from the ground.

Arctic Three-Toed Woodpecker--Picoides articus (Swainson)

Uncommon. It remains in the district during the winter and possibly breeds in the Sub-Alpine Forest Biotic area, but so far has not been noted in the summer later than April 11, 1937.

Spring records--April 11, 1937, a male in breeding condition collected at Canal Flats; March 23, 1938, one in the Moyie valley.

Winter records--October 29, 1937, a male collected near Canal Flats; December 15, 1938, one in Moyie valley; February 27, 1940, female collected at Canal Flats; February 26, 1942, one at St. Mary lake.

American Three-Toed Woodpecker--Picoides tridactylus fasciatus Baird

Resident in the Sub-Alpine Biotic area, and winters sparingly in the Kootenay and Columbia valleys.

Summer records--April 11, 1937, a female collected at Canal Flats, ovaries large.

Winter records--October 29, 1937, female collected at Canal Flats; January 21, 1938, one on Gold creek; February 4, 1938, a male collected on Gold creek.

Nesting--August 19, 1938, three young out of nest but being fed by both parents, on Whitefish creek, elevation 5800 feet.

Eastern Kingbird--Tyrannus tyrannus (Linnaeus)

Abundant summer visitant.

Migration, spring--May 20, 1937, female collected in Cranbrook; May 20, 1938, one in Cranbrook; May 27, 1940, one at Columbia lake; May 23, 1941, one in Cranbrook; May 29, 1942, one in Marysville; May 27, 1943, two in Cranbrook; May 21, 1944, two in Cranbrook; May 29, 1946, two at Wasa; May 24, 1947, one at Canal Flats.

Migration, autumn--September 3, 1940, two at Columbia lake; September 3, 1947, one in Cranbrook.

Nesting--June 26, 1937, a dead spruce tree had fallen down on the bank of the Moyie river, with its top projecting over the water; near the top of the recumbent tree a pair of kingbirds had built a nest, which contained four partially incubated eggs.

Western Kingbird--Tyrannus verticalis Say

Scarce summer visitant. It was not seen during the summers of 1938-1939. The vicinity of Cranbrook is probably the limit of their northern range in this district.

Migration, spring--June 3, 1937, one in Cranbrook; May 27, 1940, one at Newgate; May 9, 1946, one at Newgate; May 7, 1947, two in Cranbrook.

Summer records--June 17, 1937, male collected on St. Mary prairie; June 21, 1942, one at Wardner; June 15, 1943, one at Waldo.

Nesting--On two occasions this kingbird has nested on the cross arms of telephone poles in Cranbrook, once in 1937, when on July 14 the adults were feeding young, and again in 1947, when a bird was incubating on June 24.

Say Phoebe--Sayornis saya yukonensis Bishop

Only one record for the district. A male was collected near Moyie on March 27, 1942.

Hammond Flycatcher--Empidonax hammondii (Xantus)

The flycatchers are common summer visitants to the district. Sufficient collecting has not been done to determine the status of the different subspecies.

Specimen records--May 31, 1938, a breeding female collected near Wardner; June 6, 1938, a male in breeding condition collected at Waldo.

Wright Flycatcher--Empidonax wrightii (Baird)

Specimen records--June 24, 1937, a male in breeding condition collected near Wardner.

Nesting--June 9, 1938, a nest in a crotch of a choke-cherry bush (Prunus demissa), three feet from the ground, containing five partly incubated eggs; female collected. June 22, 1945, nest in a crotch of Prunus demissa, about five feet from the ground, two eggs with incubation well advanced; female collected.

Western Wood Pewee--Myiochanes richardsonii (Swainson)

A rather uncommon summer visitant. The earliest date seen, May 27, 1945, at Columbia lake.

Nesting--July 18, 1943, a pair had a nest which was "saddled" on a limb of a dead aspen, overhanging the water in the Cranbrook marsh. Two eggs were being incubated. Later, in the autumn, the nest was removed and examined; it was composed of grasses and strips of aspen bark generously interwoven with poplar or willow "cotton," fine grasses, horse hair, and one crow's feather.

Fig. 17. Canada Goose Leaving a Nest on a Muskrat "House." South End of Columbia Lake.

Fig. 18. Nest of Canada Goose on a Muskrat "House" Composed of Scirpus Stems.

On June 17, 1945, a pair were building a nest in the same location exactly as that of July 18, 1943. On June 24, 1945, there were three eggs being incubated.

Olive-Sided Flycatcher--Nuttallornis borealis (Swainson)

Scarce summer visitant.

Nesting--July 7, 1937, a male in breeding condition was collected near Cranbrook at an elevation of 4000 feet. On July 27, the locality was again visited and an adult was seen feeding three young which were perched on a limb of a fir tree; one of the young was collected.

Horned Lark--Otocoris alpestris (Linnaeus)

Spring and autumn transients.

Migration, spring--March 14, 1940, six on Skookumchuck prairie; March 3, 1941, two on Skookumchuck prairie; April 6, 1944, two on Skookumchuck prairie.

Migration, autumn--September 9, 1939, six on Skookumchuck prairie; October 9, 1940, eight at Columbia lake; September 20, 1944, six at Newgate.

Otocoris alpestris articola Oberholser

Specimen records--September 20, 1944, male; September 26, 1939, female; September 9, 1939, male; April 6, 1944, unsexed; September 13, 1939, female.

Otocoris alpestris hoyti Bishop

Specimen records--October 11, 1939, two males; October 9, 1940, male; March 14, 1940, male.

Violet-Green Swallow--Tachycineta thalassina lepida Mearns

Abundant summer visitant. This swallow is the first to arrive in the spring, and possibly the first to leave in the autumn.

Migration, spring--April 3, 1938, five over Cranbrook; March 22, 1939, one at Ta Ta creek; March 27, 1940, several at Wycliffe; March 16, 1941, two at Yahk; March 30, 1942, many flying up the Moyie valley; April 3, 1944, six at Newgate; April 1, 1946, three at Turtle lake; April 8, 1948, six at Yahk.

Migration, autumn--July 27, 1937, large numbers flying south in the Columbia valley at Edgewater; Aug. 9, 1942, a great many flying low over Columbia lake; July 27, 1943, an estimated five hundred on telephone wires at Jaffray; July 16, 1947, an estimated two hundred at Fort Steele.

Nesting--In all suitable locations throughout the Dry Forest Biotic area. May 26, 1937, a pair was nesting in the barrel of a souvenir field gun in front of the court house in Cranbrook.

Tree Swallow--*Iridoprocne bicolor* (Vieillot)

Common summer visitant.

Migration, spring--May 19, 1939, twenty-two over Turtle lake; April 29, 1940, two at Cranbrook; April 29, 1945, thirty-two over Turtle lake; April 14, 1947, one at Moyie; April 28, 1948, two at Waldo.

Migration, autumn--August 15, 1940, sixty at Jaffray; August 8, 1945, estimated one hundred and fifty at Jaffray.

Nesting--The following account is a record of three consecutive years of nesting in the same nest box in Cranbrook. May 6, 1946, a pair visit the nest box; May 12, carrying nest material; May 18, carrying feathers into box; May 19, male carries food to female, who remains in the box; July 8, young leave box and are not seen again. May 7, 1947, male and female appear at the nest box; May 31, both birds take turns at incubating; June 16, young have hatched; June 25, three young being fed by both parents; July 3, the parents have not been seen around for two days, and the three young are dead in the box. May 8, 1948, a pair inspect the nest box at 9 a. m.; May 14, weather very cold and swallows inspect the box occasionally; May 15, both birds pay a short visit to the box; May 19, both birds carry some nest material into the box; May 26, still carrying nest material; June 1, incubation starts; June 7, the male incubates and is fed by the female; June 21, feeding young; June 28, three young appear at the hole, and are fed by both parents; July 9, the three young leave the nest and sit on a fir limb, where they are fed by both parents, and later in the day fly off and are not seen again. Owing, no doubt, to some unfortunate accident to the parents, the nesting cycle in 1947 was not completed, but it is interesting to

note that in 1946 the nesting cycle was completed in sixty-four days, while in 1948, when inclement weather appeared to retard nesting operations, the cycle was completed in sixty-three days.

Bank Swallow--Riparia riparia (Linnaeus)

Uncommon summer visitant. On June 20, 1938, a small colony of five pairs were nesting in a sand-bank beside the road on the west side of Columbia lake. Subsequent road construction destroyed the site before the young had flown, and this bird was not noted again until July 3, 1948, when a large colony was found nesting in a clay-silt bank on the east side of Columbia lake. One hundred and forty nesting holes were counted, and most of them seemed to be occupied, but it was impossible to tell how many nesting couples there were, as they were continually coming with food and leaving with the excrement of the young. The young birds could be plainly heard squeaking in the holes.

Rough-winged Swallow--Stelgidopteryx ruficollis serripennis (Audubon)

Common summer visitant.

Migration, spring--April 23, 1937, several around nesting holes at Wardner; May 6, 1939, many flying north over Columbia lake; April 17, 1940, five visiting nesting holes at Cherry creek; April 22, 1941, estimated fifty flying north over Moyie lake; April 19, 1942, six at Yahk; April 28, 1944, several at nesting holes near Wardner; May 1, 1945, five at Cranbrook.

Migration, autumn--September 3, 1937, eighteen on telephone wires at Edgewater; August 21, 1938, three at Jaffray; July 27, 1943, estimated two hundred at Jaffray.

Nesting--June 19, 1937, a colony of eight pairs were nesting in a low sand bank near Cranbrook. One pair had burrowed up a rotten fir root two feet from the top of the bank, and had followed the root for three feet. The nest was composed of dry yellow pine needles scantily lined with feathers, and contained four fresh eggs. Another nest examined, in a hole in the sand, was similar in construction to the one in the root, and contained six eggs on the point of hatching.

Barn Swallow--Hirundo rustica erythrogaster Boddaert

Common summer visitant, nesting in many of the occupied and unoccupied barns in the Kootenay and Columbia valleys. It now appears to be far more numerous than it was twelve years ago.

Migration, spring--June 3, 1937, six around a barn at Curzon; May 19, 1939, twenty over Turtle lake; May 14, 1940, three at Curzon.

Migration, autumn--September 8, 1940, eight over Baynes lake; August 31, 1941, twelve over Columbia lake; September 3, 1942, twelve in Cranbrook; August 29, 1944, five in Cranbrook; September 10, 1945, three at Moyie; Sept. 10, 1948, one in Cranbrook.

Nesting--June 6, 1939, a pair were feeding three young in a nest which was built at the junction of a rafter and cross-tie in a construction camp dining-room at Canal Flats. The birds had gained access to the building through a broken window. The cook, being a man who appreciated things beautiful in nature, refused to have them molested, and had moved the dining-room table to avoid having it fouled. While the crew was having lunch the pair continued to feed the young, coming and going through the missing pane of glass in the window, although the door into the building was wide open.

Cliff Swallow--Petrochelidon pyrrhonota albifrons (Rafinesque)

Summer visitant to Cranbrook, nesting on several of the buildings in town, and in spite of persecution by English sparrows, and humans who hose out the nests, their numbers have remained about static, except in 1938 and 1939 when none were seen in Cranbrook.

Arrival and nesting in Cranbrook--May 21, 1937, building nests; June 28, 1940, three seen, did not nest this year; May 20, 1941, six pairs arrived and successfully nested; May 22, 1942, seven pairs arrived and nested; May 26, 1943, six pairs arrived and nested; June 5, 1945, eight pairs arrived and nested; May 27, 1946, twelve pairs arrived and on June 5 the nests were completed; June 8, 1948, seven were seen gathering mud after a rain storm; twelve pairs were nesting. July 27, 1943, still feeding young in nests; August 8, 1945, feeding young in nests; July 14, 1946, a nest fell from a building, killing three young in pin feathers.

Migration, autumn--The latest date ever noted was on August 18, 1943, when fifteen were seen on telephone wires at Jaffray.

Fig. 19. Wasa Lake, a Favourite Resting Place for Whistling Swan in Spring Migration.

Fig. 20. Nesting Site of Bank Swallows in a Clay-silt Bank on the East Side of Columbia Lake.

Canada Jay--Perisoreus canadensis bicolor Miller

Common resident, mostly confined to the Columbia forest and Sub-Alpine Forest Biotic areas, but in winter small groups wander about throughout the Kootenay and Columbia valleys.

Specimen records--April 7, 1938, an adult post-breeding male at Goatfell; June 4, 1938, two juveniles at Waldo.

Nesting--March 11, 1937, two adults feeding four young out of nest at Golden.

Steller Jay--Cyanocitta stelleri annectens (Baird)

Resident, chiefly in the Columbia Forest Biotic area. There is a definite movement into the Sub-Alpine Forest Biotic area during the nesting season, and a post-breeding movement to the Dry Forest area, where they winter in some numbers.

Specimen records--April 7, 1938, a non-breeding female at Goatfell.

Nesting--May 16, 1937, a pair building a nest in a spruce tree on the St. Mary river, elevation approximately 4000 feet.

Winter records--January 23, 1941, one in Cranbrook; February 6, 1944, two on Moyie lake, they were courting; March 13, 1939, two at Moyie; September 9, 1940, three at Curzon; October 10, 1940, two at Columbia lake; November 14, 1943, two at Yahk; December 7, 1944, one at Canal Flats.

Black-Billed Magpie--Pica pica hudsonia (Sabine)

Common resident, wintering in the Kootenay and Columbia valleys. The only known nesting area in the district is a section of park-like country immediately adjacent to the Montana boundary, between Newgate and Roosville.

Nesting--May 27, 1940, eight pairs noted feeding young, near Roosville. April 26, 1941, it was estimated that twelve pairs were nesting in an area of about fifty acres near Roosville. All the nests were in small yellow pine trees. One nest was examined and found to contain eight eggs with incubation just started.

Winter records--January 12, 1943, six feeding on a deer carcass

on the ice of Moyie lake; February 6, 1937, three at Wasa; March 3, 1941, twenty at Wasa; September 22, 1940, six at Columbia lake; September 3, 1948, eighty in one flock at Roosville; October 26, 1939, five at slaughter house near Cranbrook; November 29, 1940, four on deer carcass on Moyie lake; December 16, 1939, two at Peavine creek.

Raven--Corvus corax sinuatus Wagler

Common resident. Decidedly becoming more numerous than they were 10 years ago.

Summer records--April 3, 1937, two at Moyie; May 18, 1942, two crows were chasing a raven over and along a highway; their speed was checked by a speedometer in a car and found to be thirty-four miles per hour. June 5, 1940, two at Columbia lake; July 4, 1946, four at Columbia lake; August 28, 1940, two at Invermere.

Winter records--January 19, 1942, fourteen on deer carcass on Moyie lake; February 26, 1937, two in courting flight over Moyie lake; March 2, 1938, two at Wardner; September 11, 1941, three at Waldo; October 24, 1938, two at 6000 feet elevation on Palliser river; November 21, 1937, six at Moyie lake; December 5, 1940, three at Kimberley.

Nesting--June 6, 1940, two adults feeding three fully grown young in a meadow at Peavine creek; June 16, 1948, two young in a fir tree on the east side of Columbia lake; they were very noisy, and were being fed by both parents, who made frequent trips to the lakeshore where they were getting the flesh of a dead sucker.

American Crow--Corvus brachyrhynchos hesperis Ridgway

Abundant summer visitant. No evidence of them ever having wintered in this district; the latest autumn date recorded was October 16, 1940, and the earliest spring record was March 4, 1941.

Migration, spring--March 9, 1937, three at Wasa; March 17, 1938, fifteen in the Moyie valley; March 7, 1939, two at Peavine creek; March 13, 1940, twelve at Wasa; March 4, 1941, four at Cranbrook; March 16, 1942, numerous groups flying north up the Moyie valley; March 14, 1944, eight at Sand creek; March 12, 1945, eight at Peavine creek; March 12, 1946, one at Skookumchuck; March 13, 1947, twelve at Moyie; March 22, 1948, two at Wasa.

Migration, autumn--October 11, 1938, estimated one hundred flying south over Kimberley; September 28, 1939, twenty-six at Waldo; October 16, 1940, forty-two on St Mary prairie; September 28, 1941, two hundred counted at Wycliffe; September 20, 1944, two hundred and twenty counted at Waldo; September 18, 1945, eight flying south over Moyie lake; October 3, 1948, fifty-six on Skookumchuck prairie.

Nesting--The crow nests abundantly in the river bottoms in the Kootenay and Columbia valleys, and organized crow shoots make no appreciable difference in their numbers. May 8, 1937, nest in hawthorn bush (Crataegus columbiana), 5 feet from the ground, contained four partly incubated eggs; June 16, 1940, during a crow shoot, twenty-three nests were examined, mostly in small yellow pine trees on a bench above the Kootenay river. All the nests contained young, in various stages from pin feathers to fully fledged. Eight nests contained four young, twelve nests had three young, and three had only two fledglings.

Clark Nutcracker--Nucifraga columbiana (Wilson)

Common resident. In summer more or less confined to the Sub-Alpine Forest, wintering in the Dry Forest areas of the Kootenay and Columbia valleys. During the winter of 1938, twenty-five or thirty wintered in Cranbrook, causing no little interest as they visited places where food was put out for them. Toward spring some of these birds had become almost black, presumably from dirt accumulated while scavenging in the garbage dump, just outside the city limits. During the winter of 1947, seven remained in Cranbrook, visiting a feeding station regularly.

Summer records--April 6, 1941, two at Newgate; May 2, 1941, one at Newgate; June 15, 1944, two at Canal Flats; July 21, 1943, a number were seen on Maus creek at an elevation of 6000 feet; August 18, 1942, three on Maus creek at an elevation of 5500 feet; they were "hawking" for insects in much the same manner as Lewis woodpeckers sometimes do; September 8, 1940, eight at Newgate.

Winter records--January 1938 to March 1938 twenty-five remained in Cranbrook; October 31, 1937, twenty-six counted in the vicinity of Canal Flats; November 17, 1939, many were heard and seen in the vicinity of Canal Flats; December 17, 1937, very numerous in the vicinity of Newgate, where they were feeding on the seeds in the cones of Pinus ponderosa.

Nesting--May 16, 1937, both adults were feeding three young who were just able to fly; two young were collected. This was on the St. Mary river at an elevation of approximately 4000 feet, where the Columbia Forest and Sub-Alpine Biotic areas marginated.

Black-Capped Chickadee--Parus atricapillus septentrionalis Harris

Common resident. So well are they distributed throughout the Dry Forest Biotic area, that it is almost always possible to get them to come to an owl call in any wooded area, at any time of year; and each winter roving bands of black-capped and mountain chickadees, accompanied by a few nuthatches and possibly a brown creeper or two, come to a feeding station in Cranbrook, but soon pass on their way again. Whether the reason for the short visit is that the suet is not to their liking, or that their natural food is not too hard to find even in the severest weather, is not known. They have been seen and recorded in every month of the year.

Nesting--April 21, 1947, a pair seen visiting a nest hole in a dead birch tree; the hole was directly under a limb that had broken off, about twelve feet from the ground. On May 6, both parents were noticed feeding young.

Specimen record--April 25, 1937. female at Wardner.

Mountain Chickadee--Parus gambeli grinnelli van Rossem

Common resident in the Dry Forest and Sub-Alpine Biotic areas. In the winter they associate themselves with roving bands of black-capped chickadees. Records have been obtained for every month of the year.

Nesting--On April 15, 1938, a pair was noticed examining a knot hole, 30 inches from the ground, on a woodshed wall in Cranbrook. The hole was too small for their entrance, so it was enlarged and a nest box, with a removable lid for observation, was placed over the hole inside the building. On April 16, the pair started carrying nest material into the box. Working from daylight to dusk, the birds rapidly filled the box with pieces of paper, rag, grasses, and moss; this aggregate was finally lined with feathers and what appeared to be cat's fur. On April 18, the first egg was laid, then one a day until there were six, when incubation started. The eggs all hatched on May 6; one young died on May 11, and was removed from the nest with a pair of tweezers. Both parents took part in feeding the young, which grew very rapidly and left the nest on May 16.

Specimen records--April 25, 1937, a female at Wardner; October 10, 1938, a female at Canal Flats.

White-Breasted Nuthatch--Sitta carolinensis aculeata Cassin

Resident in the yellow pine forests in the Dry Forest Biotic areas in the district.

Specimen records--April 11, 1937, a male and female at Canal Flats, both were in breeding condition; October 29, 1938, a female at Canal Flats; October 8, 1948, a male at Wardner.

Red-Breasted Nuthatch--Sitta canadensis Linnaeus

Common resident.

Summer records--April 11, 1938, a pair at nest hole in Cranbrook; May 31, 1942, two at Moyie; June 4, 1938, feeding young at Canal Flats; July 1, 1938, one at Jap lake; August 11, 1937, male collected at Turtle lake; September 2, 1940, two at Columbia lake.

Winter records--October 3, 1947, three at Waldo; November 21, 1940, female collected at Canal Flats; December 23, 1941, three in Cranbrook; January 30, 1938, three in Cranbrook; February 6, 1939, four in Cranbrook; March 2, 1940, two in Cranbrook.

Nesting--June 4, 1938, a pair carrying food to young in a hole in a dead aspen, eight feet from the ground, at Canal Flats. April 10, 1948, a pair carrying nest material into a hole in a fence post in Cranbrook.

Pygmy Nuthatch--Sitta pygmaea melanotis van Rossem

Rather scarce resident in the yellow pine forest in the Dry Forest Biotic area in the district. Not noted north of 50 degrees of latitude north.

Specimen record--November 14, 1939, female near Island pond.

Sight records--March 23, 1941, two at Newgate; September 8, 1940, three at Newgate.

Brown Creeper--Certhia familiaris montana Ridgway

A rather scarce resident. It is possible that in the summer, and during the nesting season, this elusive little bird has escaped

notice, for winter records only have been obtained, when attention has been directed to them by the ubiquitous chickadees with which they associate.

Specimen record--November 1, 1942, female in Cranbrook.

Winter records--January 30, 1938, one in Cranbrook in company with red-breasted nuthatches; February 25, 1938, one in Cranbrook; February 6, 1939, two at Wasa in company with six chickadees; September 30, 1942, one at Waldo; April 1, 1945, one in Cranbrook with three chickadees; February 18, 1949, one in Cranbrook with six chickadees.

Dipper--Cinclus mexicanus unicolor Bonaparte

Resident. Well distributed throughout the district. Records have been obtained for every month in the year. It is remarkable how insensible these birds are to cold. With the temperature at twenty-four degrees below zero on January 1, 1942, a dipper was diving in some open water between cakes of ice on Palmer Bar creek. The bird was bringing up alder leaves from the bottom of the creek, turning them over on the ice and searching for any aquatic life adhering to them, upon which it was feeding. This method of obtaining food had evidently been carried on for some time, as there were twenty-three leaves lying on the ice by the pool.

Nesting--On April 23, 1938, a pair was building a nest on a rock ledge above a waterfall on Bull river. May 8, incubation was in progress and one of the adults was feeding the other in the nest. June 3, the young had left the nest and three of them were sitting around on rock ledges above the water, being fed by both parents. This nest was used again in 1948, for on July 11, an adult was seen flying to it with something in its beak. This was seized by a bird thrusting its head out of the hole in the nest; presumably incubation was again in progress.

House Wren--Troglodytes aedon parkmanii Audubon

Summer visitant.

Migration, spring--May 23, 1937, pair at nest box in Cranbrook; May 28, 1944, one in Cranbrook; May 7, 1945, one in Cranbrook.

Migration, autumn--It is thought that these wrens migrate from the nesting territory soon after the last brood of the season has left the nest, as none have been noted in the district later than August 12, 1947.

Nesting--June 14, 1937, a pair had a nest behind some loose bark on a dead fir tree at Turtle lake, five eggs were being incubated; June 16, 1945, in a disused shed near Cranbrook a nest had been constructed at the junction of a rafter and cross tie, and a piece of hanging cable lent further support to the nest. This was a very bulky affair of dry sticks of various sizes and lengths, plentifully lined with duck feathers, evidently obtained from the shore of an adjacent alkali pond. Seven eggs were in process of incubation. June 20, 1948, a pair visited a nest box in Cranbrook. On July 5, they were filling the box with sticks, many of which were dropped and left on the ground beneath the nest; July 28, feeding young, which on August 11 left the nest and were not seen again.

Winter Wren--Troglodytes troglodytes pacificus Baird

Resident. Restricted to the Columbia Forest and Sub-Alpine Forest Biotic areas.

Summer records--July 9, 1942, male singing on Maus creek, elevation approximately 5000 feet. August 10, 1941, one on Perry creek at an elevation of 4500 feet.

Winter records--September 29, 1938, one on Maus creek, elevation 5000 feet; November 27, 1941, one on St. Mary river.

Nesting--June 21, 1941, a pair had a nest built in the cribbing of a bridge pier on the St. Mary river; it contained six fresh eggs. July 16, 1942, an adult feeding a young out of the nest on Maus creek, at an elevation of about 5000 feet.

Long-Billed Marsh Wren--Telmatodytes palustris plesius Oberholser

Summer visitant to the marshes in the Dry Forest Biotic area.

First seen in spring--May 23, 1937, three at Island pond.

Migration, autumn--September 15, 1937, many were seen crawling around in Scirpus beds on the north end of Columbia lake, the same thing being seen on September 28, 1938, September 22, 1940, and on August 31, 1941.

Nesting--On May 24, 1937, one was seen flying with a piece of nest material in its beak, into a bed of Scirpus in Island pond. On June 2, the location was searched and seven nests were located in close proximity to each other; three contained six, six and three

eggs respectively, the other four were empty, being probably "false nests," as there did not appear to be more than three nesting pairs in the vicinity. All the nests were suspended from Scirpus stems, and were constructed of closely woven strips of cat-tail, lined with a fine water weed and cat-tail down.

Catbird--Dumetella carolinensis (Linnaeus)

Summer visitant to the valleys in the Dry Forest Biotic area. Arriving late in the spring they leave, apparently, soon after the young are on the wing in the summer, but it is also true that this secretive bird could easily escape casual notice, therefore any notes on migration might be misleading.

Spring, first seen--May 27, 1940, one at Roosville.

Autumn, last seen--August 21, 1939, one at Colvalli.

Nesting--June 24, 1937, a nest in a tangle of wild rose bushes near Wardner, containing four young in pin feathers. A nest under observation in Cranbrook contained one egg on June 23, 1937, three more eggs were laid in three successive days, incubation started on June 27, the eggs hatched on July 8, and the young left the nest on July 20.

American Robin--Turdus migratorius propinquus Ridgway

Abundant summer visitant.

Specimen records--May 14, 1938, male and female, Cranbrook; September 16, 1938, male, Cranbrook.

Migration, spring--The following records were all obtained in Cranbrook: March 6, 1937, two; March 3, 1938, one; March 15, 1939, three; March 4, 1940, two; February 27, 1941, two; March 8, 1942, three; March 21, 1943, two; March 14, 1944, three; March 6, 1945, four.

Migration, autumn--October 31, 1937, two in Cranbrook; October 31, 1938, three on Perry creek; November 2, 1939, three in Cranbrook; October 16, 1941, six in Cranbrook: October 30, 1942, two in Cranbrook; October 20, 1948, twenty came to a bird bath in Cranbrook; one was in full song.

Nesting notes of interest--Early nesting: April 19, 1940, a pair started nest in Cranbrook; April 26, first egg laid: incubation

of four eggs started on May 1; young hatched on May 12. On April 20, 1948, a pair was building a nest in a poplar shade tree in Cranbrook. When the nest was almost complete, the birds abandoned it, possibly on account of the weather, which was unseasonably wet and cold. On June 23, following, the nest had been completed and a female was on the nest incubating three eggs. It would be interesting to know whether this was a time lapse, or if the pair nested elsewhere and returned to this nest again for a subsequent brood, or if another pair adopted the partially completed nest. Late nesting: August 8, 1940, both parents feeding half-grown young in Cranbrook; August 14, 1942, female brooding three newly hatched young in a nest built on a cross brace in an old shed in Cranbrook.

Varied Thrush--Ixoreus naevius meruloides (Swainson)

Summer visitant to the Sub-Alpine Forest Biotic areas in the district. There is no evidence that they winter here.

Specimen records--April 5, 1942, male at Kitchener.

Migration, spring--March 18, 1938, male in Cranbrook; April 16, 1939, male in Cranbrook; March 22, 1940, three males and one female at Kitchener; April 5, 1942, two males at Kitchener; March 24, 1943, male in Cranbrook; April 2, 1945, male in Cranbrook; March 31, 1948, male in Cranbrook.

Migration, autumn--September 29, 1938, four adults and three young at an elevation of 6000 feet on Maus creek; September 21, 1945, five on the St. Mary river.

Summer records--May 27, 1937, female on the Moyie river at 5500 feet elevation; July 16, 1942, a male on Perry creek.

Nesting--July 9, 1942, several males were heard singing their monotone whistle in some thick spruce timber on Maus creek, at an elevation of 6000 feet, and a female was seen with her beak full of food, but could not be followed through the thick timber.

Hermit Thrush--Hylocichla guttata faxoni Bangs and Penard

The writer has failed to record this bird, which should, and no doubt does, occur in the summer throughout the higher elevations of the Sub-Alpine forests in the district. The only record is for a male that was evidently killed when he struck some telephone wires, and was picked up dead on a boulevard in Cranbrook on October 1, 1941.

Swainson Thrush--Hylocichla ustulata almae Oberholser

An abundant summer visitant to the mixed forests of the district, up to at least 5000 feet elevation.

Migration, spring--May 16, 1937, one at St. Mary lake; May 28, 1938, four singing at Peckham's lake; May 20, 1947, two singing at Columbia lake.

Migration, autumn--September 1, 1938, one in Cranbrook; August 24, 1942, one at Columbia lake.

Nesting--June 16, 1937, a nest in a fork of an alder tree, five feet from the ground, four eggs well advanced in incubation, at Little Bull river; July 6, 1937, a male collected with incubation patch on Perry creek, elevation 4500 feet; July 16, 1942, on Maus creek, a pair was constructing a nest in a fork of a small birch tree; both birds were tearing off strips of inner bark from a dead aspen tree and picking up dry leaves.

Veery--Hylocichla fuscescens salicicola Ridgway

Summer visitant. Far less common than the preceding thrush.

Summer records--June 16, 1937, one at Peckham's lake; July 4, 1938, one at Mineral lake; June 4, 1940, one at Columbia lake.

Nesting--June 17, 1945, a female collected with an incubation patch at Cranbrook marsh.

Western Bluebird--Sialia mexicana occidentalis Townsend

Occasional summer visitant. Absent from the district in some summers.

Migration, spring--March 24, 1938, two males at Moyie; March 31, 1939, a male collected on Columbia lake; April 2, 1941, one male at Lumberton.

Nesting--A pair reported nesting in a bird box in Fort Steele in 1941, this attempt was frustrated by a cat; July 14, 1948, a pair feeding two large young out of nest.

. Mountain Bluebird--Sialia currucoides (Bechstein)

Abundant summer visitant, nesting from the valleys to the limit of trees.

Migration, spring--The following dates are for their first appearance in the district for twelve springs, all dates referring to March: 9, 1937; 10, 1938; 18, 1939; 11, 1940; 5, 1941; 13, 1942; 23, 1943; 19, 1944; 20, 1945; 4, 1946; 14, 1947; 22, 1948.

Migration, autumn--The following dates are for the last time seen in the district in the autumn, all dates referring to October: 20, 1938; 3, 1939; 19, 1940; 9, 1941; 23, 1942; 1, 1943; 27, 1944; 9, 1946; 19, 1948.

Nesting--The following notes are records for the nesting cycles of pairs, occupying nest boxes in Cranbrook, kept under observation in the summers of 1947 and 1948. On April 27, 1947, a pair appeared at the nest box; April 30, both birds carried some nest material into the box; from May 1 to May 19, the pair visited the box only occasionally and were not seen carrying nest material. May 20, both birds were busily engaged in carrying nest material into the box. May 27, incubation presumed to have started as female remained in the box. June 3, male incubated and female brought him food. June 9, young had hatched and both parents carried food into the nest. June 21, both parents fed three young who appeared at the entrance to the nest box. June 27, the young left the nest, perched in some fir trees, and were fed by parents.

April 14, 1948, a pair made a short inspection of the nest box that was used by the bluebirds last year, it having been previously cleaned out and fumigated; the male went in and out of the box several times, once carrying in a small stick. The bluebirds were not seen at the box again until May 8, when they made a short inspection at 9 a. m. Leaving again, they reappeared on May 15, when nest building started and continued without delay, during daylight, until May 19. On May 27 the female remained in the box, and was presumed to be incubating. June 1, the male carried food to the incubating female. June 10, both parents carried food into the box. June 24, four young, who were very noisy, appeared at the hole to be fed. June 28, the young left the box. It is interesting to note that in 1947, when the weather was normal for that time of year, a period of thirty-one days elapsed between the first inspection of the box and the start of incubation, while in 1948, when cold, wet, unseasonable weather prevailed, the elapsed period was forty-four days. And yet there was only one day's difference between the dates on which the young left the nest.

Townsend Solitair--Myadestes townsendi (Audubon)

Common summer visitant, wintering in some numbers in the Kootenay and Columbia valleys, their food consisting mainly of the fruit of juniper (Juniperus communis).

Winter records--January 8, 1941, four noted in different places in the Moyie valley; February 14, 1942, one at Moyie; March 1, 1943, one at Fort Steele; October 28, 1940, two together at Canal Flats; November 22, 1943, two at Canal Flats; December 17, 1937, one at Wardner.

Nesting--May 18, 1937, a nest in a bank beside the road near Fish lake, at an elevation of 3600 feet; it contained one egg. On May 21, four eggs had been laid and the bird was incubating. The nest was composed of rootlets and small sticks, and lined with the needles of the yellow pine. May 29, 1942, four eggs being incubated in a nest in a bank beside the road at Marysville, elevation 3400 feet. June 17, 1947, a nest with five large young in a crevice in a rock-cut beside the road near Wardner, elevation 2500 feet. The young left the nest the next day and were being fed in the vicinity by both parents.

Golden-Crowned Kinglet--Regulus satrapa olivaceous Baird

Resident in the coniferous sections of the district. It is not thought to be by any means common.

Winter records--November 22, 1943, one with a roving band of chickadees on Columbia lake; February 1, 1944, four together near Dutch creek; December 9, 1944, one with chickadees in Cranbrook; October 11, 1948, two near Canal Flats, a male collected; February 2, 1949, six together in Cranbrook.

Nesting--July 6, 1937, a female with brood patch collected on Perry creek; elevation 4500 feet.

Ruby-Crowned Kinglet--Regulus calendula calendula (Linnaeus)

Abundant summer visitant.

Migration, spring--The following dates, for nine years, refer to the month of April, and are records of this kinglet's first spring appearance in a garden in Cranbrook, where it regularly

nests in the fir trees: 23, 1938; 17, 1939; 12, 1940; 13, 1941; 11, 1942; 10, 1943; 18, 1946; 13, 1947; 19, 1948.

Migration, autumn--September 30, 1944, one in Cranbrook; September 6, 1946, one in Cranbrook; September 3, 1947, one at Waldo; September 18, 1948, one at Columbia lake.

Nesting--They nest regularly in some fir trees in a garden in Cranbrook. The nest can sometimes be found, when located on one of the lower limbs, by the feathers that fall on the lawn during nest construction. On May 21, 1938, a pair was carrying feathers to the nest; on May 27, the nest was robbed by a squirrel (Obiit). The nest was suspended from the underside of a limb by being intertwined with the needles; it was composed of grass, moss, and small twigs and was bound together with such material as pieces of string and small fragments of cloth; the interior was plentifully lined with feathers. May 18, 1940, a pair constructed a nest sixteen feet from the ground; June 2, 1940, both parents were feeding the young; June 21, 1947, both parents feeding young in a nest twelve feet from the ground; June 26, 1948, both parents feeding young in a nest eighteen feet from the ground.

Alpine Pipit--Anthus spinoletta pacifica Todd

Spring and autumn transients.

Migration, spring--April 23, 1937, five at Wasa; April 27, 1941, five at Colvalli; April 15, 1942, twelve at Newgate; April 27, 1943, thirty-one at Waldo; April 20, 1947, eight at Windermere; April 29, 1948, thirty-six at Ta Ta creek.

Migration, autumn--September 5, 1937, one at Ta Ta creek; September 29, 1938, six on Maus creek, above timberline, approximately 7000 feet elevation; September 9, 1939, eighty-two at Newgate; September 8, 1940, thirty-six at Roosville; October 6, 1941, nine at Waldo; September 13, 1942, twelve at Rampart; September 30, 1944, sixteen at Rampart.

Bohemian Waxwing--Bombycilla garrulus pallidiceps Reichenow

An abundant winter visitant to the Kootenay and Columbia valleys.

Dates of arrival in autumn--October 29, 1937, twenty at Dutch creek; October 10, 1939, eight at Tochty; November 3, 1940 twelve in Cranbrook; October 9, 1941, fifteen at Windermere;

October 23, 1942, twenty-two at Sand creek; November 10, 1944, estimated to number two hundred; October 29, 1946, fifty-two in Cranbrook; October 15, 1947, fifteen in Fort Steele; November 21, 1948, estimated one hundred in Cranbrook.

Last date seen in the spring--March 29, 1938, twelve in Cranbrook; March 7, 1939, six at Tochty; March 2, 1940, sixteen in Cranbrook; March 25, 1941, fourteen at Dutch creek; March 24, 1942, estimated two hundred at Wardner; March 31, 1943, twenty at Ta Ta creek; March 7, 1944, six at Canal Flats; March 5, 1945, fourteen at Cherry creek; March 6, 1947, several small flocks scattered about the country in the vicinity of Cranbrook, feeding on the berries of bearberry (Arctostaphylos uva-ursi); April 9, 1948, estimated one hundred and eighty at Ta Ta creek.

Cedar Waxwing--Bombycilla cedrorum Vieillot

Common summer visitant.

Migration, spring--June 5, 1937, two in Cranbrook; June 20, 1938, five at Canal Flats; June 13, 1940, two in Cranbrook; June 8, 1941, two at Columbia lake; May 31, 1943, five at Ryan; May 30, 1944, two in Cranbrook; June 13, 1945, one at Wardner; June 16, 1947, one at Peavine creek; June 5, 1948, two in Cranbrook.

Migration, autumn--September 13, 1942, three in Cranbrook; September 7, 1948, one in Cranbrook.

Nesting--July 4, 1948, a nest in a willow bush, five feet from the ground, containing six partly incubated eggs. July 7, 1945, a pair building a nest eight feet from the ground in a fir tree in Cranbrook. They had considerable opposition from a pair of robins nesting close by, but in spite of this heckling the waxwings completed the nest on July 10. Incubation of five eggs started on July 15, and the young hatched on July 28. On August 1, both parents were seen feeding the young by regurgitation. August 13, four young climbed out on the limb to be fed and returned to the nest again. August 15, the young left the nest, were fed by both parents in an adjacent tree, and were not seen again after this date. On June 7, 1948, a pair was seen gathering nest material and struggling with some ends of a frayed canvas; a number of pieces of string were cut into convenient lengths and laid on the canvas, and all these were carried away. The nest was not located, but it must have looked like a net bag!

Northern Shrike--Lanius excubitor invictus Grinnell

Winter visitant.

Dates of arrival in the autumn--October 26, 1937, one at St. Mary Mission; October 12, 1938, one at Canal Flats; October 11, 1940, one at St. Mary Mission; October 21, 1942, one at Eager; October 26, 1945, one at Eager.

Last seen in the spring--April 4, 1938, female collected at Eager; April 10, 1938, female collected at Canal Flats; the ovaries showed no sign of impending breeding; April 6, 1940, one at Wycliffe; March 9, 1941, one in the Crows Nest pass; April 8, 1942, one at Wasa; April 2, 1943, one at Peavine creek.

Winter records--November 28, 1945, one in Cranbrook carrying a dead sparrow in its claws. December 11, 1942, one in Cranbrook. January 8, 1943, at 4:45 p. m., a frantic squeaking was heard in a garden in Cranbrook, and investigation disclosed a shrike attacking an English sparrow on the lawn, in about six inches of loose snow; both birds were fluttering around with the shrike pecking furiously at the sparrow's head, and when approached, the shrike seized the sparrow's neck in its beak and flew away with some difficulty. February 21, 1943, one at Goatfell; March 4, 1947, one seen near Cranbrook carrying a small bird in its claws.

Solitary Vireo--Vireo solitarius cassinii Xantus

Probably more common than the records indicate. September 3, 1948, one at Newgate, identified by a specimen collected.

Red-Eyed Vireo--Vireo olivaceus (Linnaeus)

Common summer visitant to the deciduous river bottoms of the Dry Forest and Columbia Forest Biotic areas in the district.

Migration, spring--Earliest date recorded was May 29, 1941, when one was heard and seen at St. Mary lake.

Migration, autumn--Latest date recorded was September 2, 1945, when two were seen at Columbia lake.

Summer records--June 9, 1937, in full song, Columbia lake; June 8, 1938, male and female collected at Wasa; July 1, 1947, two

singing at Columbia lake; August 4, 1947, song still heard at Columbia lake.

Nesting--July 2, 1939, a nest suspended from an alder limb, six feet from the ground contained four fresh eggs.

Warbling Vireo--*Vireo gilvus swainsonii* Baird

Rather uncommon summer visitant.

Summer records--May 31, 1938, a female collected near Cranbrook; ovaries large. June 23, 1937, one in Cranbrook; June 24, 1937, two at Mayook.

Yellow Warbler--*Dendroica petechia* (Linnaeus)

Common summer visitant.

Migration, spring--May 12, 1937, two males in Cranbrook; May 30, 1938, male collected at Kitchener; May 26, 1941, a pair in Cranbrook; May 8, 1945, male in Cranbrook; May 30, 1947, male in Cranbrook.

Migration, autumn--September 7, 1941, one on Gold creek; September 29, 1945, three in Cranbrook.

Nesting--July 1, 1937, nest in a crotch of a willow, seven feet from the ground at Jap lake, four young about four days old; July 4, 1944, a pair in Cranbrook carrying nest material; June 22, 1945, three young, in a garden in Cranbrook, who had evidently been washed out of the nest by a torrential rain; they were on the ground and unable to fly; when placed in a bush the parents continued to feed them.

Audubon Warbler--*Dendroica auduboni auduboni* (Townsend)

Common transient. Some remain in the district to nest.

Migration, spring--May 12, 1937, three males in Cranbrook; May 6, 1939, eight on the shore of Columbia lake; May 17, 1941, pair in Cranbrook; April 30, 1943, one male in Cranbrook; May 12, 1944, a pair at Wasa; May 20, 1945, a male in Cranbrook.

Migration, autumn--October 3, 1939, four migrating with bluebirds at Wasa; October 6, 1940, several with bluebirds at Waldo; October 26, 1945, one on Mount Baker; September 21, 1947, six with bluebirds at Rampart.

Summer records--July 1, 1942, a male came to a bird bath in Cranbrook; July 13, 1944, a male in Cranbrook.

Nesting--In a fir tree in Cranbrook, in close proximity to a house, a pair commenced to build a nest on May 5, 1943. The nest was placed on a fork of a limb, thirteen feet from the ground, which could be observed from an upstairs window. For a period of seven days between May 5 and May 11, the pair was occupied in building the nest, a rather sketchy affair of small twigs, strips of bark, and dry fir needles, lined with fine rootlets. On May 17, the first thinly spotted, greenish egg was laid, and thereafter one a day until there were four; incubation commenced on May 21, and all the eggs hatched on June 4. On June 8, the record was interrupted, for the nest was empty and all four naked chicks were lying dead on the lawn beneath the nest. House wrens, nesting in the vicinity, were held suspect, for they had been seen molesting the warblers during the incubation period.

Macgillivray Warbler--Oporornis tolmiei (Townsend)

Summer visitant.

Summer records--June 16, 1937, a pair on Bull river, thought to be nesting; May 24, 1941, a pair in the Crows Nest pass; July 9, 1941, a male on Maus creek; about 4000 feet elevation.

Nesting--On June 9, 1948, a nest was found, very close to the ground, in the tangled stems of a soopolallie bush (Shepherdia canadensis), at Columbia lake. The female was incubating five eggs, four of which hatched on June 18; the young were almost full-fledged on June 25. On July 1, the young had left the nest which was removed and examined. It was composed of dry grass stems closely interwoven with strips of the inner bark of the aspen poplar; the "cup" was fine grass lined with minute rootlets and eight horse hairs.

Yellow-Throat--Geothlypis trichas occidentalis Brewster

A common summer visitant to the marshes in the Kootenay and Columbia valleys.

Migration, spring--Earliest date seen in the spring, May 14, 1940.

Migration, autumn--All the following dates refer to yellow-throats noted in Scirpus beds on the north end of Columbia lake. September 24, 1937; September 18, 1938; September 22, 1940; August 31, 1941.

Summer records--May 20, 1937, male collected in the Cranbrook marsh, testes large; June 9, 1939, six pairs seen in the Cranbrook marsh.

Black-Capped Warbler--Wilsonia pusilla pileolata (Pallas)

Its status as a summer visitant has not been determined. It is included in this list on the strength of a male collected in the Cranbrook marsh on May 20, 1937.

American Redstart--Setophaga ruticilla (Linnaeus)

Common summer visitant to the thick deciduous under-growths in the Kootenay and Columbia valleys.

Migration, spring--May 30, 1937, mature male at St. Mary lake; May 30, 1944, mature male at Nigger creek; May 28, 1947, mature male at Columbia lake.

Nesting--June 6, 1937, nest in a crotch of a willow, four feet from the ground at Peckham's lake, adult male and female both taking part in nest construction; July 1, 1937, a nest four feet from the ground in a crotch of a willow at Jap lake, containing three well incubated eggs; June 19, 1945, a nest at Peckham's lake, built in a crotch of a willow, five feet from the ground, containing three half-grown young. Two adults, both in female plumage, arrived at the nest simultaneously to feed the young.

English Sparrow--Passer domesticus (Linnaeus)

Resident in Cranbrook. Their status remains about the same from year to year.

Bobolink--Dolichonyx oryzivorus (Linnaeus)

Scarce summer visitant, but apparently becoming more plentiful and extending their range farther north. From 1937 to 1945, they were not recorded north of Waldo and Kitchener, being localities close to the United States boundary, but since 1946 they have been seen as far north as Ta Ta creek.

Migration, spring--May 30, 1938, a male in full song at Kitchener; May 28, 1946, one male at Ta Ta creek.

Summer records--June 30, 1941, two pairs at Waldo; July 6, 1946, a male at Ta Ta creek; June 3, 1948, two pairs at Ta Ta creek; July 9, 1948, one male at Waldo.

Nesting--July 6, 1941, both parents feeding four young, in pin feathers, in a nest built in a depression among thick grass in the Waldo meadows.

Western Meadowlark--Sturnella neglecta Audubon

Abundant summer visitant to all areas suitable for agriculture in the district.

Migration, spring--All the dates following refer to March and are for their first appearance in the spring; 9, 1937; 25, 1938; 21, 1939; 10, 1940; 4, 1941; 10, 1942; 23, 1943; 18, 1944; 22, 1945; 6, 1946; 31, 1948.

Migration, autumn--September 29, 1938, one in Cranbrook; October 17, 1941, one near Cranbrook; October 16, 1942, one near Cranbrook; October 15, 1944, one at Wasa; October 8, 1947, five at Wasa.

Yellow-Headed Blackbird--Xanthocephalus xanthocephalus (Bonaparte)

Local summer visitant. As far as is known their occurrence in this district is restricted to the Cranbrook marsh, where from twelve to fifteen pairs nest every summer, but in 1940 one pair was seen at the north end of Columbia lake. However, it is not known if they have ever nested there.

Migration, spring--The following dates are for the first appearance of these blackbirds in the Cranbrook marsh, and all refer

to the month of May: 8, 1937; 16, 1938; 14, 1940; 18, 1941; 12, 1944; 18, 1947. The males usually put in their appearance three or four days before the females arrive.

Migration, autumn--It is quite apparent that, soon after the young are able to fend for themselves, both they and the adults leave this district, for the latest date recorded was July 31, 1937, when several adults and some juveniles were seen flying over the Cranbrook marsh.

Nesting--On May 29, 1937, it was estimated that twelve mated pairs were nesting in the Cranbrook marsh. Ten nests were examined, and were found to be either in the course of construction or containing eggs. All the nests were within a radius of two hundred feet, and were similar in construction. The nests were anchored to, and suspended from, the stems of cat-tail by strips of that plant which was woven around the stalks, holding together a rather loosely assembled mass of the ribbon-like leaves; this was lined with dried-out algae. Six nests contained four, four, four, three, three, and two eggs respectively, and four nests were in various stages of construction.

Red-Winged Blackbird--Agelaius phoeniceus nevadensis Grinnell

Summer visitant to the marshes and small lakes in the Kootenay and Columbia valleys.

Migration, spring--The following dates for nine years, all referring to March, are for their first appearance in spring at the Cranbrook marsh, where they nest in some numbers: 11, 1938; 24, 1939; 8, 1940; 26, 1941; 31, 1943; 28, 1945; 29, 1946; 17, 1947; 23, 1948.

Migration, autumn--October 19, 1938, three at Fernie; September 28, 1939, large flocks in the Columbia valley near Windermere; September 11, 1944, estimated two hundred in Cranbrook; October 1, 1948, six at Baynes lake.

Nesting--May 23, 1937, eight pairs nesting at Island pond in a thick growth of Scirpus; some nests were incomplete, others contained eggs. One nest had four eggs with incubation started. May 24, 1939, it was estimated that twenty-two pairs were nesting in the Cranbrook marsh in a Typha bed. Most of the pairs were still busy with nest building, but three nests contained one, two, and three eggs respectively. Male blackbirds repeatedly chased crows when they flew over the nesting area.

Bullock Oriole--Icterus bullockii bullockii (Swainson)

Casual summer visitant. A male was seen at Springbrook on June 15, 1940. There is no evidence that they nest in this district, but a male and female were seen together in the same locality at Columbia lake on May 25 and 26, 1946.

Brewer Blackbird--Euphagus cyanocephalus (Wagler)

Common summer visitant.

Migration, spring--March 13, 1938, one male at Yahk; April 4, 1942, six males near Cranbrook; March 30, 1943, three males at Yahk; February 28, 1944, five males near Cranbrook; March 23, 1948, six males at Wasa.

Migration, autumn--October 21, 1938, one around camp-site on Palliser river, elevation 4800 feet; October 12, 1941, sixteen near Cranbrook; October 29, 1942, six at Baynes lake; October 4, 1947, thirteen near Cranbrook; November 5, 1948, eight on St. Mary prairie.

Nesting--On May 26, 1940, at least five pairs were nesting near a small marsh on the south end of Columbia lake. Red-winged blackbirds were also nesting in the vicinity. Two brewers' nests, at the tangled base of small willow bushes, contained six and five well incubated eggs; other nests in similar situations were found, but these, as well as some of the red-wings', had evidently been robbed by crows.

Cowbird--Molothrus ater artemisiae Grinnell

Summer visitant, with seasons intervening when they are conspicuous by their absence. For instance, in 1937 they were very numerous, but in the summers of 1938-39-40 and 1941, none were recorded. Again in the summers of 1944 and 1948 they were recorded as quite numerous.

Migration, spring--May 1, 1942, male and female together near Cranbrook; May 19, 1944, two males and one female at Bull river; May 24, 1945, twelve males and five females at Jaffray.

Migration, autumn--It would appear that, soon after mating and egg deposition has taken place, the adults leave this district, for the writer has not recorded adults in the summer later than

July 12, 1937, when a group of six males and five females was seen near Wasa. The latest date recorded for a young bird was July 17, 1948, when one came to a bird bath in Cranbrook to drink.

Summer records--On June 9, 1937, a group of four males and five females was seen near Cranbrook, from which a male and female were collected. The female had an egg in her oviduct and all the males in the group were displaying and courting. June 12, 1948, six males and four females at Wasa.

Egg deposition and host--On June 9, 1944, at 12 noon, attention was drawn to a chipping sparrow's nest in a garden in Cranbrook, by the excited behaviour of its owners. The cause of this excitement became evident when a female cowbird was seen moving along the limb of the fir tree on which the nest was situated. In spite of the efforts of the sparrows to drive the cowbird away, she reached the nest. After a moment's pause, she seized an egg in her beak, flew down on to the lawn beneath the nest, and after breaking the egg, appeared to be eating its contents; she then unhurriedly flew up on to a fence, remained there for a short time and then flew away. Subsequent examination showed that the contents of the egg, that is the embryo, (the sparrow had been incubating nine days,) had been eaten. Now the questions arise, was the cowbird looking for food, and if so, there being nothing to alarm her, why did she not go back and get the two remaining eggs? Or was she, feeling the duties of motherhood imminent, looking for a suitable nest in which to deposit her egg, and if so, why did she not do this after breaking the sparrow's egg? The answers seem to be obvious--after breaking the egg and finding it was well advanced in incubation, she instinctively knew that the time and place was not right for her to deposit a fresh egg in a nest in which the contents were soon to hatch. However, be that as it may, she was probably more successful elsewhere in the immediate vicinity, for on July 7, following, a female yellow warbler was seen feeding a young lout of a cowbird in the same garden.

Western Tanager--Piranga ludoviciana (Wilson)

Summer visitant. By no means common.

Migration, spring--The earliest spring record is for May 6, 1944, when a pair was seen in Cranbrook.

Migration, autumn--The latest recorded date in the summer is for one seen at Waldo on August 1, 1948.

Nesting--A male with brood patch collected at Mineral lake.

Lazuli Bunting--Passerina amoena (Say)

Scarce summer visitant, restricted to the Kootenay valley river bottom.

Summer records--June 20, 1938, a male seen near Canal Flats; July 2, 1938, a male and female together at St. Mary Mission; July 6, 1941, male at Waldo; July 17, 1945, a pair at St. Mary Mission; June 12, 1947, a pair at St. Mary Mission.

Nesting--A female with egg in oviduct collected at Peckham's lake, June 20, 1937.

Evening Grosbeak--Hesperiphona vespertina brooksi Grinnell

A regular winter visitant to Cranbrook, where they feed almost exclusively on the winged fruit of the introduced maple trees (Acer). Casual in the summer.

Summer records--May 16, 1937, a pair in Cranbrook; May 30, 1942, a male in Cranbrook.

Nesting--On June 4, 1938, a male and female were collected near Wardner; the female had a large egg in her oviduct.

Winter records--January 12, 1940, twelve in Cranbrook; February 7, 1937, six in Cranbrook; March 4, 1940, five in Cranbrook; April 25, 1941, one male in Cranbrook; October 22, 1938, fourteen in Cranbrook; November 8, 1948, nine in Cranbrook; December 3, 1942, six in Cranbrook.

Cassin Purple Finch--Carpodacus cassini Baird

Common summer visitant.

Migration, spring--April 4, 1937, male collected near Wardner; April 17, 1941, a male near Cranbrook; April 15, 1942, a male in Cranbrook; April 28, 1944, a male at Wardner; March 28, 1947, two males in Cranbrook.

Migration, autumn--August 31, 1944, two at Waldo; August 6, 1947, two at Wasa; August 12, 1948, three in Cranbrook.

Summer records--May 31, 1938, a pair at Wardner; June 20, 1944, male and female with young in Cranbrook; July 24, 1947, pair in Cranbrook.

Nesting--June 20, 1937, a pair feeding young at Peckham's lake, nesting high up in a fir tree; July 17, 1946, male feeding young out of nest in Cranbrook; May 7, 1947, a pair carrying nest material into the top of a high fir tree in Cranbrook.

Pine Grosbeak--Pinicola enucleator montana Ridgway

Winter visitant in the Kootenay valley, probably nests at higher elevations in the adjacent Sub-Alpine Forest Biotic areas.

First seen in autumn--December 14, 1937, five at Rampart; October 22, 1938, eight on the Palliser river, elevation 5100 feet; October 31, 1939, six at Eager; December 9, 1940, four at Palmer Bar creek; November 15, 1942, eight at Palmer Bar creek; December 24, 1947, twelve in Cranbrook; December 11, 1948, nine in Cranbrook.

Last seen in the spring--February 15, 1938, fifteen at Wasa, three adult males collected; March 4, 1939, two at Wasa; March 3, 1941, twelve at Wasa; March 14, 1944, one adult male at Newgate; April 3, 1948, eleven in Cranbrook; March 15, 1949, six in Cranbrook.

Rosy Finch--Leucosticte tephrocotis (Swainson)

Regular winter visitant in the Kootenay and Columbia valleys.

First seen in the autumn--December 6, 1939, fourteen at Wycliffe; November 3, 1940, seven at Moyie; November 1, 1942, fifteen at Eager; October 27, 1945, twenty-eight at Fort Steele; October 21, 1947, estimated two hundred at Wasa; November 19, 1948, four at Fort Steele.

Last seen in the spring--April 20, 1937, sixty-three at Eager; April 17, 1940, eighteen at Meadowbrook; May 12, 1942, forty-eight at Eager; March 24, 1944, three at Wycliffe; April 13, 1945, estimated one hundred and eighty near Kimberley; March 31, 1948, twenty-two near Kimberley.

Summer records--September 10, 1938, twenty-six seen above timberline on Maus creek, about 7500 feet elevation.

Winter records--January 22, 1941, estimated two hundred at Eager; February 6, 1947, one hundred and nineteen counted at Eager; March 10, 1947, a very large collection of rosy finches was seen at Eager; it was estimated that at least eight hundred were feeding, evidently on weed seeds, in open country. As the hindermost kept

flying over the others on the ground, it looked like a grey wave rolling along on the grassy hillside.

Rosy Finch--Leucosticte tephrocotis tephrocotis (Swainson)

Specimen records--April 7, 1937, two males at Eager; April 25, 1937, two males and one female at Eager; February 8, 1938, one male at Ta Ta creek; October 29, 1939, male and female at Eager.

Leucosticte tephrocotis littoralis Baird

Specimen records--April 7, 1937, a male and female at Eager; February 8, 1938, a male at Ta Ta creek; October 29, 1939, a male and female at Eager. All the specimens of littoralis were collected from mixed flocks of littoralis and tephrocotis.

Common Redpoll--Acanthis flammea flammea (Linnaeus)

Rather irregular winter visitant; none were noted in the winters of 1943-46 and 1947.

First seen in the autumn--December 11, 1939, fourteen at Lumberton; December 6, 1940, twenty-six at Skookumchuck; November 1, 1944, eighteen at Cranbrook; October 31, 1941, four at Marysville; October 26, 1948, thirty-one at Columbia lake.

Last seen in the spring--March 7, 1937, thirteen at Eager; March 24, 1939, eleven at Wasa; February 27, 1940, sixteen at Canal Flats; March 25, 1941, fifty-five at Dutch creek; March 21, 1944, eleven at Springbrook; March 20, 1945, sixty-five at Fort Steele.

Winter records--January 10, 1940, twenty-six at Moyie; January 25, 1945, eighteen at Eager.

Pine Siskin--Spinus pinus pinus (Wilson)

Summer visitants, occasionally absent as in 1939 and 1943.

Migration, spring--March 13, 1938, fifteen in Cranbrook; March 25, 1942, one in Cranbrook; March 18, 1945, three in Cranbrook; March 12, 1947, five in Cranbrook.

Migration, autumn--September 29, 1938, sixteen at the head of Maus creek, about 6500 feet in elevation; October 16, 1941, six in Cranbrook; September 11, 1944, fifteen in Cranbrook; September 6, 1946, in a garden in Cranbrook the fir trees were alive with siskins, and they were flying down to a bird bath to drink and bathe. There was a constant stream of these birds coming and going; twenty-nine were counted in the bath at one time. September 17, 1948, eighty-two at Dutch creek.

Summer records--May 17, 1940, twelve together in Cranbrook; June 7, 1942, nine together at Wolf creek; July 22, 1940, six adults and four juveniles in Cranbrook; August 17, 1941, six with some crossbills near Wasa.

Nesting--July 19, 1940, a pair feeding young in a nest high up in a fir tree in Cranbrook; May 16, 1945, a crow destroyed the eggs of a pair nesting in a fir tree in sight of the author's home in Cranbrook.

During the night of May 10, 1942, there occurred in Cranbrook a very unseasonable fall of snow, which so weighted down the limbs of the fir trees, that three partly fledged siskins fell from their nest. They had apparently been lying on the ground in the snow for five or six hours before being discovered. They were carried into the house and placed in a small box lined with cotton. Mrs. Johnstone undertook to feed them with scalded and crushed canary seed, mixed with bread and milk with hard boiled egg yolk added; this mixture was fed to the small birds on the end of a pointed stick. Within twenty-four hours two of the nestlings died, but the third flourished, and by the time it was fully fledged it was capable of feeding itself. Placed in a cage, which was kept beside another in which a canary lived, the siskin made an amusing and interesting pet until it died from some unknown cause on August 22, 1947.

Some interesting traits of this domesticated wild bird are worth noting here. It definitely showed a preference for Mrs. Johnstone, who had reared and looked after it. Her voice or the sound of her approaching footsteps would send the bird into a state of excitement, and on her approach to the cage, it would open its mouth as if expecting to be fed. Often released from the cage, it would fly about the house, showing no fear of any human being, indeed, often settling on their head or shoulders. Although its sex was never determined, it was presumed to be a male, as it learned, and frequently repeated, the sustained song of the canary, phrase by phrase; not with the same volume or exuberance, it is true, but if out of sight, the siskin's song could be distinguished from that of the canary only by the muted and rather "wispy" notes.

American Goldfinch--Spinus tristis pallidus Mearns

Uncommon summer visitant.

Migration, spring--June 7, 1942, three males at Wasa; June 9, 1948, two pairs at Ta Ta creek.

Migration, autumn--August 1, 1940, four males and three females, feeding on thistles near Cranbrook; August 3, 1941, six at Turtle lake; August 25, 1942, two males in Cranbrook; August 3, 1944, three males on thistles at Eager; August 7, 1948, one male in Cranbrook.

Nesting--July 16, 1946, male and female, feeding one young out of nest in Cranbrook. On the morning of August 8, 1948, in Cranbrook, a little girl found a partly fledged goldfinch which apparently had fallen from its nest. The little foundling was presented to Mrs. Johnstone, who, with some misgivings, told the little girl that she would look after it, having in mind the siskin she had once reared. At 7 p. m. that evening, Mrs. Johnstone had the young goldfinch in a cage on the verandah, attempting to feed it without success, though the bird was obviously in need of food and "cheeping" loudly. Without warning, a female, evidently the mother, flew to the cage, driving the young bird nearly frantic. Mrs. Johnstone then took it out of the cage and released it on the lawn, when it promptly fluttered over to a fence where the female was sitting, and was fed by her. Next day the young bird was still around the garden being fed by its mother, then both disappeared.

Red Crossbill--Loxia curvirostra bendirei Ridgway

Resident, but erratic in occurrence. During the years 1937, 1944, and 1945, they were abundant. In 1938, 1941, 1942, 1943, 1946, and 1947, they were scarce, and in 1939, 1940, and 1948, apparently absent entirely, as none were noted.

Specimen records--July 21, 1937, a male at Wasa; July 31, 1937, a female at Cranbrook: August 13, 1937, a male at Fort Steele; February 25, 1942, male and female at Wardner.

Nesting--Nesting apparently takes place at any time between February and August, for on February 25, 1942, a female was collected with large egg yolks in the ovaries, and another was collected on July 31, 1937, with an egg in the oviduct ready for deposition.

White-Winged Crossbill--Loxia leucoptera leucoptera Gmelin

Rare visitant. The only record is for February 28, 1947, when fourteen were counted in a fir tree in Cranbrook.

Spotted Towhee--Pipilo maculatus Swainson

Scarce spring migrant. Only three records: April 3, 1937, a female collected at Smith lake; May 10, 1937, one seen at Perry creek; April 8, 1939, one seen in the Cranbrook marsh.

Savannah Sparrow--Passerculus sandwichensis nevadensis Grinnell

Common spring and autumn transient. Have not been recorded in any summer during June, July, and August.

Specimen records--May 1, 1937, a male near Cranbrook; May 14, 1938, a female near Cranbrook; September 14, 1941, a male at Columbia lake; October 8, 1948, a male near Waldo.

Migration, spring--April 28, 1937, one at Wycliffe; May 14, 1938, one near Cranbrook marsh; April 23, 1942, one on St. Mary prairie; May 5, 1945, two at Columbia lake; May 26, 1947, one at Jap lake.

Migration, autumn--September 12, 1938, two at Columbia lake; September 7, 1940, six at Rampart pond; September 14, 1941, eight on shores of Columbia lake; September 28, 1945, three at Columbia lake; October 8, 1948, two at Waldo.

Vesper Sparrow--Pooecetes gramineus confinis (Baird)

Common summer visitant.

Migration, spring--May 6, 1937, two near Cranbrook; April 23, 1938, six at Turtle lake; April 27, 1941, three at Rampart; April 23, 1942, six on St. Mary prairie; April 29, 1945, two near Cranbrook; May 6, 1947, two near Cranbrook; April 28, 1948, one at Waldo.

Migration, autumn--September 6, 1937, seven at Turtle lake; September 8, 1940, twelve at Newgate; August 31, 1941, six at Columbia lake; September 10, 1942, fourteen near Cranbrook; September 14, 1948, one near Cranbrook.

Nesting--June 23, 1937, near Mayook, a pair had a nest in a depression on the ground under an antelope bush (Purshia tridentata), containing four young in pin feathers. June 14, 1942, a nest containing four partly incubated eggs, had been constructed in a depression at the base of a large lupine plant (Lupinus laxiflorus). The nest was composed of dried grass and weed stalks mixed with shredded aspen bark, and was lined with fine grass and horse hair.

Slate-Coloured Junco--Junco hyemalis hyemalis (Linnaeus)

Rare winter visitant. During the winter of 1937-38, seven made periodic visits to a feeding station in Cranbrook, on December 22, 1937, January 21, 1938, February 3, 1938, and on February 6, 1938, when two males were collected.

Oregon Junco--Junco oreganus montanus Ridgway

Abundant summer visitant. No definite records of successful wintering have been obtained.

Specimen records--March 28, 1937, a male at Fort Steele; April 4, 1937, a male; March 27, 1940, a male at Cranbrook.

Migration, spring--The following dates for their first appearance in the spring, given for twelve years, all refer to the month of March: 13, 1937; 10, 1938; 20, 1939; 12, 1940; 5, 1941; 17, 1942; 9, 1943; 10, 1944; 15, 1945; 9, 1946; 6, 1947; 22, 1948.

Migration, autumn--The following dates for last seen in the autumn are given for five years, and all refer to the month of October: 10, 1939; 23, 1940; 16, 1942; 28, 1944; 10, 1948.

Winter records--November 21, 1944, one at Palmer Bar creek; November 19, 1945, two at Jaffray; December 9, 1939, one at Eager.

Nesting--May 28, 1937, nest with four incubated eggs, in a bank at Bull river; April 29, 1938, nest on the ground under a growth of Arctostaphylos uva-ursi, contained six eggs, two of which had just hatched; May 18, 1939, nest with four eggs, partly incubated, in a bank near Wardner; June 10, 1942, nest on the ground under a bush (Purshia tridentata), at Eager, contained four well incubated eggs.

Tree Sparrow--Spizella arborea ochracea Brewster

An occasional spring migrant.

Specimen records--April 3, 1937, a male, Cranbrook marsh; April 3, 1938, a male and female, Cranbrook marsh.

Sight records--March 29, 1937, two in the Cranbrook marsh; April 5, 1942, three at Wardner.

Chipping Sparrow--Spizella passerina arizonae Coues

Abundant summer visitant.

Specimen records--May 20, 1937, male at Cranbrook; May 28, 1938, female at Bull river.

Migration, spring--May 9, 1937, three in Cranbrook; May 1, 1938, one at Waldo; May 8, 1940, one in Cranbrook; May 12, 1941, four in Cranbrook; April 21, 1942, two in Cranbrook; May 8, 1944, two at Rampart; May 17, 1945, three in Cranbrook.

Migration, autumn--August 31, 1937, two in Cranbrook; September 1, 1940, three at Waldo; August 15, 1942, one in Cranbrook; September 29, 1945, six at bird bath in Cranbrook.

Nesting--June 4, 1937, nest at Peckham's lake on a limb of a small fir tree; the nest, a loose construction of dried grasses, contained four incubated eggs; May 20, 1938, a nest on a spruce limb contained two fresh eggs; June 3, 1944, a nest on a fir limb in a garden in Cranbrook, four eggs incubated for nine days, (see notes on Cowbird.) July 1, 1948, young able to fly but being fed by parents in Cranbrook.

Clay-Coloured Sparrow--Spizella pallida (Swainson)

One record only. A male collected on May 15, 1937, near Wardner.

White-Crowned Sparrow--Zonotrichia leucophrys leucophrys (Forster)

One record only. A male collected at Smith lake on May 8, 1937.

White-Crowned Sparrow--Zonotrichia leucophrys gambelii (Nuttall)

A rather uncertain spring and autumn transient in the Kootenay and Columbia valleys. None were noted during the years 1940, 1941, 1942, and 1943.

Specimen records--May 1, 1937, two males collected in the Cranbrook marsh.

Migration, spring--May 1, 1937, two males in the Cranbrook marsh; April 23, 1938, nineteen on the shores of Columbia lake; May 9, 1945, two in Cranbrook; May 4, 1947, one at Columbia lake.

Migration, autumn--October 13, 1944, six on the shores of Columbia lake; October 28, 1945, one at Columbia lake; September 21, 1947, one in Cranbrook; November 11, 1948, one at feeding station in Kimberley.

Nesting--On June 16, 1939, a pair was noted on Bull river, at an elevation of 4500 feet. One of the birds was seen to be carrying what appeared to be nest material; further investigation could not be made at that time. The vicinity was visited again on June 23; both birds were still present, but the nest could not be located.

Fox Sparrow--Passerella iliaca schistacea Baird

Two records only. A male collected in the Cranbrook marsh on May 8, 1937, and one seen at close range on Columbia lake on September 1, 1945.

Lincoln Sparrow--Melospiza lincolnii lincolnii (Audubon)

Rare transient. Two records only. A male collected on the Kootenay river near Wardner on May 15, 1937, and one seen in the Cranbrook marsh on May 8, 1937.

Song Sparrow--Melospiza melodia merrilli Brewster

Common summer visitant. A few often remain in close proximity to a feeding station all the winter.

Specimen records--April 3, 1937, two males at Smith lake; May 14, 1939, breeding male at Columbia lake; May 20, 1939, breeding pair at Curzon.

Migration, spring--March 25, 1938, one at Wasa; March 24, 1939, one at Palmer Bar creek; March 27, 1940, one at Wycliffe; March 19, 1941, one on St Joseph creek; March 22, 1942, three at Moyie; March 14, 1945, one at Marysville; March 12, 1949, two at Kimberley.

Migration, autumn--August 31, 1941, six at Columbia lake; October 13, 1944, October 16, 1946, three at Columbia lake.

Winter records--February 16, 1940, one at Marysville; January 10, 1945, one at Sand creek; February 8, 1947, one in Cranbrook; December 28, 1947, one in Kimberley; January 19, 1948, one in Kimberley.

Nesting--May 20, 1939, a nest at Curzon built on the ground at the base of a shrubby cinquefoil bush (Potentilla fruticosa), contained four partly incubated eggs.

In 1937, a complete record of a nesting cycle was obtained, and is of sufficient interest to be included in this list. On April 22, a pair commenced to build a nest in a small stunted cedar tree (Thuja occidentalis), about three feet from the ground. The nesting pair was first noted at 8 a. m., when only a few small sticks had been laid in place; by noon the foundation of the nest had taken shape. April 23 was a cold rainy day and little work was done on the nest, but both birds remained in close proximity. April 24, both birds worked all day carrying small sticks, dried grass, and strips of cedar bark. One bird obtained the nest material in the immediate vicinity, and made three visits to the nest in four minutes. April 26, both birds engaged in lining the nest with fine rootlets, dried grass, and a few horse hairs. April 28, one bird was still adding lining to the nest, the other uttering snatches of song. April 29, the nest appeared to be ready for eggs, but the pair was not seen again until May 2, when one egg was laid. May 3, two eggs in the nest at 8 a. m. May 4, three eggs at 7 a. m. May 5, bird on nest at 7:30 a. m., at noon the bird was not on the nest, which then contained four eggs. May 6, bird on nest all day, song became more sustained. May 11, the bird was off the nest and feeding at 2 p. m. May 13, bird off the nest and feeding at 8:30 a. m. May 15 at 7 p. m. both birds were off the nest and seemed very excited; investigation disclosed a weasel (Mustela), in the vicinity of the nest; after it had been disposed of, the birds settled down and one returned to the nest. May 18, the eggs all hatched between 7 a. m. and 12 p. m. May 20, both parents were feeding young, principally on green caterpillars. May 22, the young birds' eyes were open. May 25, young were becoming well feathered. They appeared restless, and were being fed at frequent intervals by

both parents. May 27, young left the nest before 7 a. m., and were being fed in the vicinity of the nest.

Lapland Longspur--Calcarius lapponicus alascensis Ridgway

An irregular spring and autumn transient. Apparently absent altogether in some years.

Specimen records--May 1, 1937, a female in the Cranbrook marsh; October 23, 1937, a male in the Cranbrook marsh; October 1, 1944, a juvenile on Columbia lake; October 1, 1948, a female on Columbia lake.

Sight records--October 1, 1940, twenty at the Cranbrook airport; September 30, 1948, two at Columbia lake; October 7, 1948, one at Wasa.

Snow Bunting--Plectrophenax nivalis nivalis (Linnaeus)

Winter visitant. Very numerous in some years.

First seen in the autumn--October 25, 1939, four at Yahk; October 28, 1940, fifteen at Canal Flats; November 2, 1941, twenty-two at Eager; October 23, 1942, eight at Sand creek; November 3, 1944, twenty at Island pond; October 31, 1945, six at Skookumchuck; November 13, 1946, twenty-five at Wasa.

Last seen in the spring--March 21, 1937, estimated three hundred at Wardner; March 27, 1939, eighteen at Fort Steele; March 29, 1940, one at Fort Steele; March 26, 1941, sixteen at Waldo; March 8, 1942, twenty-five at Rampart; March 31, 1943, three at Skookumchuck; March 21, 1944, twenty at Skookumchuck; March 16, 1947, five at Meadowbrook; April 9, 1948, one at Skookumchuck.

Winter records--November 16, 1939, estimated one hundred and sixty in the Columbia valley; December 3, 1940, six on St. Mary prairie; January 12, 1944, twelve at Wardner; February 26, 1941, estimated ninety near Cranbrook.

OCCASIONAL PAPERS SERIES

of the

BRITISH COLUMBIA PROVINCIAL MUSEUM,

VICTORIA, B.C.

No. 1. The Vertebrate Fauna of the Peace River District of British Columbia. Ian McTaggart Cowan. (Out of print.)

No. 2. Oceanic Fishes from the Northeast Pacific Ocean. Wilbert McLeod Chapman. 50 cents.

No. 3. The Grebes: Studies of Waterfowl in British Columbia. J. A. Munro. 50 cents.

No. 4. Some Accounts of the Flora and Fauna of the Driftwood Valley Region of North Central British Columbia. John F. and Theodora C. Stanwell-Fletcher. 50 cents.

No. 5. A Corner Stone of Canadian Culture: An Outline of the Arts and Crafts of the Indian Tribes of British Columbia. Alice Ravenhill. 50 cents.

No. 6. Observations of Birds and Mammals in Central British Columbia. J. A. Munro. 50 cents.

Other publications of the Provincial Museum are:—

Annual Reports: Covering the activities of the Museum for each year.

Handbook Series: Contributions concerning the natural history and anthropology of the Province.